A TAXONOMIC REVISION OF *CRATAEGUS* SERIES *LACRIMATAE* (ROSACEAE)

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ABSTRACT

This paper reviews *Crataegus* ser. *Lacrimatae* (Rosaceae), the largest segregate of ser. *Flavae*, sens. auctt. Nearly 1500 specimens were examined for the study of this often abundant component of the southeastern United States flora. A detailed series description is given, together with differentiation from allied series. Twenty-two distinct and several subsidiary species are treated, broadly following species concepts established by Beadle, who had recognized 54 species. One of the species treated, **C. lancei,** is new to science. A key is provided to all taxa treated. All names used are typified, detailed species descriptions provided, 20 of the species are provided with line illustrations, mostly for the first time and the first ever distribution maps, 17 in all, are provided. Most, if not all, of the species of series *Lacrimatae* are more or less fire-resistant xeromorphs some of which are capable of surviving in the most xeric of North American *Crataegus* habitats. The series is marked by normally pendulous branching, often yellow to orange fruit, small leaves and a high degree of glandularity.

KEY WORDS: *Crataegus*, ser. *Lacrimatae*, *C. lancei* sp. nov., Rosaceae, taxonomic review, southeastern United States, xeromorphy

RESUMEN

En este artículo se revisa *Crataegus* ser. *Lacrimatae* (Rosaceae), el segregado mayor de la ser. *Flavae*, sens. auctt. Se examinaron cerca de 1500 especimenes para el estudio de este componente, a menudo abundante, de la flora del sureste de los Estados Unidos. Se da una descripción detallada de la serie, junto con la diferenciación de las series parecidas. Se tratan veintidós especies distintas y varias subsidiarias, siguiendo en líneas generales el concepto de especie establecido por Beadle, que ha reconocido 54 especies. Una de las especies tratadas, **C. lancei,** es nueva para la ciencia. Se aporta una clave para todos los taxa tratados. Se tipifican todos los nombres usados, se aportan descripciones detalladas de las especies, ilustraciones de 20 de las especies, la mayoría por primera vez y los primeros mapas de distribución, 17 en total. La mayoría, si no todas, de las especies de la serie *Lacrimatae* son xeromórficas más o menos resistentes al fuego alguna de las cuales es capaz de sobrevivir en los hábitats de *Crataegus* más xéricos de Norteamérica. La serie se reconoce por su ramificación normalmente péndula, fruto a menudo de amarilla a naranja, hojas pequeñas y un alto grado de glandulosidad.

INTRODUCTION

This paper continues an ongoing revision of elements of *Crataegus*, mainly poorly or imperfectly known series, in the southeastern United States. The previous publications cover series *Aestivales*, *Parvifoliae*, *Pulcherrimae, Bracteatae* and *Triflorae,* and *Apricae* (Phipps (1988a, b), Phipps and Dvorsky (2006, 2007), Phipps, O'Kennon and Dvorsky (2006), Phipps, Lance and Dvorsky (2006)).

Series *Lacrimatae* is most similar to ser. *Apricae* but is part of what American authors during much of the last century have included in *Flavae*, a problem which is discussed in Phipps and Dvorsky (2007). The two series *Lacrimatae* and *Apricae* are differentiated as follows: whereas all but two dwarf species of ser. *Lacrimatae* have more or less pendulous terminal branches, at least at maturity, and all have distinctly zig-zag young twigs, 20 stamens and white to cream anthers, members of series *Apricae* lack conspicuously pendant branches, have unbent or only slightly bent nodes, most commonly 10 stamens and often have pink to purple anthers. In addition, ser. *Lacrimatae* species usually have less venous leaves, their veins spreading at a narrower angle. It would also appear to be the case that a good many members of ser. *Apricae* are less xeromorpic than any in ser. *Lacrimatae*. In herbaria confusion of smaller-leaved species of ser. *Lacrimatae* with *C. uniflora* (ser. *Parvifoliae*) is not uncommon, but more or less straight, non-pendulous twigs are definitive for ser. *Parvifoliae*. In addition, the number of styles and nutlets is usually greater and the calyx lobes are normally much larger and much more deeply dissected in the latter series. Also see discussion under ser. *Parvifoliae* (Phipps & Dvorsky 2006a).

There are two rather well defined groups within ser. *Lacrimatae* which are here described as subseries. These differ primarily in leaf shape, size, and texture, in twig thickness, and in fruit size, shape, and color. The first subseries, *Tenues* (spp. 1–8a), consists of more slender plants, with shorter and finer thorns, generally smaller and thinner leaves, often smaller flowers, smaller fruit and generally thinner twigs. The second subseries, *Robustae* (spp. 9–22), consists of sturdier plants, with stouter and generally longer thorns, larger leaves, often larger flowers, usually larger fruit and generally thicker twigs. Many of the species of both these groups are densely white-hairy, typical xeromorphs, though a few are glabrous. Nearly all have yellow (sometimes red-cheeked) to orange or ruddy fruit.

No species names correctly attributable to ser. *Lacrimatae* appeared before 1900 when Beadle commenced his studies in this large group and Ashe described a few species. However, it is to Beadle that credit must be given for being the first to observe and comprehensively record their variation. Beadle eventually (1903) recognized 54 species in nine groups that might equate to subseries. Nearly all later floristic workers have shown a reluctance to get to grips with Beadle's demonstration of this large amount of variation, and drastically reduced Beadle's total of species without discussion, thus, none of these treatments represents a critical re-examination of the group. Murrill (1942), however, in a local study of Florida hawthorns, added several species which either seem to represent rare, local forms, or can be synonymized, and none of them is upheld here. W.W. Ashe also made quite numerous collections, particularly in North Carolina, but described relatively few taxa in this group, all of which are either synonymized here or untypifiable. In spite of the attention of these three authors, one of the species treated here, *C. lancei,* had escaped notice (or else perhaps equates to an untypifiable Ashe name), and is thus new to science.

In the view presented here, Beadle did name too many species, which often differ from one another by only slight differences in fruit shape or tomentum. However, the opposite extreme of attempting to lump all or most of the variation into a very few species, if done with an eye to objectivity rather than procrustean systematics, is a very difficult exercise. Nevertheless, that is what important floras of the region since Beadle's time have habitually done, for example, Tidestrom (1933), Radford et al. (1968) and Wunderlin and Hansen (2003), who typically used some or all of *C. flava* (Aiton 1789), *C. lacrimata* (Small, 1901), *C. floridana* (Sarg. 1902) and *C. michauxii* (Pers. 1806). These four species names will now be considered.

Crataegus flava has understandably found favor since it is a very old name and became the type of the long-established series *Flavae* (Loudon) Rehder. Nevertheless, careful examination of its type specimen shows it to be a particularly distinct member of series *Flavae* as previously delimited (Phipps 1988a). Indeed, it proves so different from the remaining *Flavae* that it is now transferred to ser. *Intricatae* (see discussion in Phipps & Dvorsky 2007). Faxon's illustration of *C. flava* (something like *C. condigna* Beadle or *C. colonica* Beadle is shown) in Sargent's Silva vol. IV, of 1890, was no doubt influential as the source of the misapplication of *C. flava* in a generic sense for ser. *Lacrimatae* species. Although Sargent (1902) later issued a corrected description and illustration of *C. flava* no attention appeared to be given to it. The 1902 correction is of a plant far more like true *C. flava* though it differs in stamen number. *Crataegus lacrimata*, on the other hand, is one of the most typical, yet distinct and easily recognized members of ser. *Lacrimatae* and it is difficult to see why its interpretation should be widened. In any case, there are earlier names available from the series. Sargent's 1902 account of *C. floridana* has no illustration and explains that the 1890 '*flava*' illustration should apply to it. This would appear to have resolved the confusion, at least from Sargent's perspective. However, unaccountably, it did not and instead it merely provided a rather imprecisely illustrated *C. floridana* for the ranks of later floristic accounts. *Crataegus floridana* correctly understood, was nonetheless another poor choice for one-to-few species accounts of the groups since while there is no question that it is a typical member of ser. *Lacrimatae*, it is not only a less clear-cut species than *C. lacrimata* but as many as 11 species accepted here all have earlier names, and therefore the name lacks appropriate priority if combined with any of them.

Particular problems surround the much used name *C. michauxii* which many floras, starting with Beadle (1903), have treated as a member of the southeastern United States flora, where it is routinely construed to be a member of ser. *Lacrimatae* (under different group names) more or less as understood here. Persoon's name *C. michauxii* was a new one for *C. glandulosa* of A. Michaux (1803), itself homonymous to *C. glandulosa*

of Moench (1785) and of Georgi (1776) which are Eurasian. Persoon's protologue gives: "Habitat in Carol. Super."; "spinosis...stipulis, calycibus imaque fol. parte glandulosis, fol. subrotund. breviter lobatis subpubescentibus; fl. subsessilis," which is of little diagnostic help. Moreover, the name *C. michauxii* is rejected for use in this paper because the type specimen at P of Michaux's *C. glandulosa* is simply a piece from a vigorously growing extension shoot of an unidentifiable species. Any attempt to effect an accurate modern identification from such defective material seems impossible unless at some future date it were to be done by molecular methodology. One thus has to wonder about Beadle's rationale in resuscitating the name *C. michauxii* when his species concepts were narrow. Of course, Beadle's (op. cit.) usage itself is probably at least approximately interpretable (but I have seen no material named this in Beadle's hand). Subsequent authors simply did not investigate the nomenclatural problem, preferring their own interpretation of Beadle's usage. A practicable solution might appear to be to epitypify *C. glandulosa* Michx. on excellent modern reproductive material that is a presumed best match for Beadle's usage of *C. michauxii*. However, the later applications of this name are too inconsistent or vague to make such an exercise worthwhile. Thus, those authors who include all or most Floridian members of series *Lacrimatae* and *Apricae* under *C. michauxii* ignore the type issue. However, if ser. *Lacrimatae* were to be treated as a single species, the earliest available unquestionably suitable names become *C. alabamensis* Beadle and *C. senta* Beadle, both described in 1900.

This study is based on the examination of well over 1,400 herbarium specimens of ser. *Lacrimatae* including borrowings from 35 herbaria and fairly large collections of duplicates received from R. Lance. It has greatly helped this study to have made my own (JBP) considerable collections of ser. *Lacrimatae*, in many cases with matching fruit and flower specimens. Such fieldwork also enables one to observe habit and color differences that are not evident in herbarium specimens as well as, of course, observing many times more specimens than actually collected. This level of sampling greatly facilitated identifying repeating patterns of variation, sometimes with surprising ease. The repeating patterns are matched against type material, nearly always Beadle's, which is generally of high quality. There were relatively few good quality specimens that are intermediate between accepted taxa. Where "annotations" are referred to under several species discussions this alludes to JBP annotations made prior to final decisions on the correct name and these provisional names were applied because the size and complexity of the project meant that it became inappropriate to retain loans until final decisions could be made.

Some of the characteristics found useful in the taxonomy of ser. *Lacrimatae* include thorn frequency and size, leaf general shape and size, tomentum of pedicel, hypanthium and fruit, flower and fruit size, margination of leaf (manner and extent to which lobed and toothed). A number of species possess long-petiolate leaves that can flutter in the wind or droop (become "floppy") in calm air. These characteristics are so helpful when learning taxa that they are used routinely in our keys and descriptions even though they will not be evident in herbarium specimens. Also, there is some indication that the form of extension shoot leaves in this series, usually passed over in *Crataegus* taxonomy due to its frequently extreme plasticity as well as shortage of identifiable herbarium examples, may prove of taxonomic value when better documented. For example, *C. florens* Beadle and *C. dolosa* Beadle (a form of *C. integra* (Nash) Beadle) apparently consistently possess more or less circular, lobeless extension shoot leaves. As with all modern specialist *Crataegus* taxonomy, short-shoot leaf-shape has been found particularly valuable and we have attempted to articulate this more precisely than Beadle did, both in words and with the numerous line illustrations.

Beadle's keys give somewhat imprecise descriptions of the leaf shapes which are often so diagnostic in *Crataegus*, and this makes positive identification from the keys a challenge, to put it mildly. However, loans of critical types, principally from A, plus easy access to the digitized type collections at US and NY (where the type specimens of many Beadle names are unfortunately attributed to W.W. Eggleston rather than the real collector) greatly helped in making critical determinations. However, names due to Ashe have often presented more or less insuperable typification difficulties of the kind previously discussed in Phipps *et al.* (2006a). Fortunately, it is possible to confidently match all the here-accepted names in *Lacrimatae* against type material without needing to apply any names of Ashe or Murrill.

It became clear early in this study that Beadle was the only previous worker who had made any sense of the great variation in ser. *Lacrimatae*. The 22 species recognized here nevertheless represent a substantial reduction from the 54 species found in Beadle's final account (1903) without being procrustean. As in all the first author's taxonomies that use a similar approach, the complete lack of or at least, low frequency of, intermediates is a critical consideration in coming to decisions on taxon delimitation. The highly dissected variation patterns encountered are thus at pesent most easily treated as rather narrow species some of which may eventually prove to equate to apomictic microspecies, although several other species turn out to be quite variable, e.g., *C. crocea* and *C. condigna*. However, nothing is yet known about the breeding systems or chromosome numbers of ser. *Lacrimatae*, the count for *C. agrestina* Beadle in Talent et al. (2005) actually representing a ser. *Pulcherrimae* individual with correct usage of this name so such valuable interpretive information cannot be used.

Series *Lacrimatae* has a similar geographical range to ser. *Apricae*, but is far more abundant (Fig. 1), with 1458 records in our database compared to 274 for the former series. This far greater abundance of material made most taxonomic decisions easier than for the treatment of ser. *Apricae* (Phipps & Dvorsky 2007), the predecessor to this paper.

This paper provides the first revision of the species included by Beadle (1902, 1903) in his subgroups *Michauxianae*, *Integrae*, *Dentatae*, *Attritae*, *Sentae*, *Anisophyllae*, *Colonicae*, *Recurvae* and *Lepidae* plus elements of *Visendae*. (*Crataegus fruticosa* Sarg. 1902, repeatedly collected around the time of its description and not seen since, is perhaps a hybrid between a member of ser. *Lacrimatae* and ser. *Aestivales* and is excluded.) Most illustrations are firsts and *Crataegus meridiana* is the only widely occurring species not illustrated, both because it is somewhat obscure to characterize and because of lack of really good presumptively typical material. Most maps are also firsts and are presented on a county frequency basis. Most of the illustrations and all the maps are firsts. Complete descriptions are provided for all main species. More obscure forms are treated as subordinate taxa, usually without illustration or map. Often these have abbreviated descriptions. All taxa and synonyms used are typified. Synonymy, however, is somewhat incomplete (as it is for most North American series), here largely due to problems with Ashe names. As in other recent publications in this series, Ken Dvorsky is responsible for creating the maps. An appendix of cited specimens is provided.

TAXONOMIC PART

Series **Lacrimatae** J.B. Phipps, Taxon 37:113. 1988. TYPE SPECIES: *Crataegus lacrimata* Small, Torreya 1:97. 1901.

Shrubs, sometimes very small, or small trees; bark on trunks black or dark gray and highly corrugated (presumably fire-resistant), unlike that of most other *Crataegus* series; ultimate branches pendulous, particularly in the very slender-twigged species, also zigzag at the nodes, often purple-brown at 1 year; thorns mostly 1–5 cm long, none to numerous, ± straight, usually slender, very dark at 1 year. Leaves deciduous, petioles very short to long (10–40% length blade); blades small (1–4 cm long), ovate to oblong in general shape, usually shallowly lobed; margins entire to toothed, very glandular; lateral veins 1–5/side, exiting mainly or wholly in the apical part of the blade; tomentose, at least when young in most species. Inflorescences 1–4(–7)-flowered; the branches in many species densely appressed white-pubescent, bearing small, deciduous, linear, membranous, gland-margined bracteoles with generally high persistence through anthesis. Flowers 10–20 mm diam.; hypanthium often tomentose; calyx-lobes ± narrow-triangular, entire to glandular-dentate; petals ± circular or rarely elliptic, white; stamens 20, anthers usually white to cream; styles 3–5. Fruit 6–12 mm diam., pyriform to orbicular, yellow through orange and copper to red, one face often colored most brightly, smooth or with scattered hairs; calyx-lobes usually reflexed; nutlets 3–5, dorsally grooved, sides plane. Most species ripen their fruit in August, before sympatric hawthorns.

Series *Lacrimatae* constitutes a characteristic and frequently abundant element of the sand plains, scrubby areas and pinelands of the southeastern United States coastal plain and piedmont from Louisiana east of the Mississippi, south to central Florida thence north on both sides of the Appalachians and extreme southeastern Virginia. Treated here are 22 usually fairly narrowly defined species and six more obscure

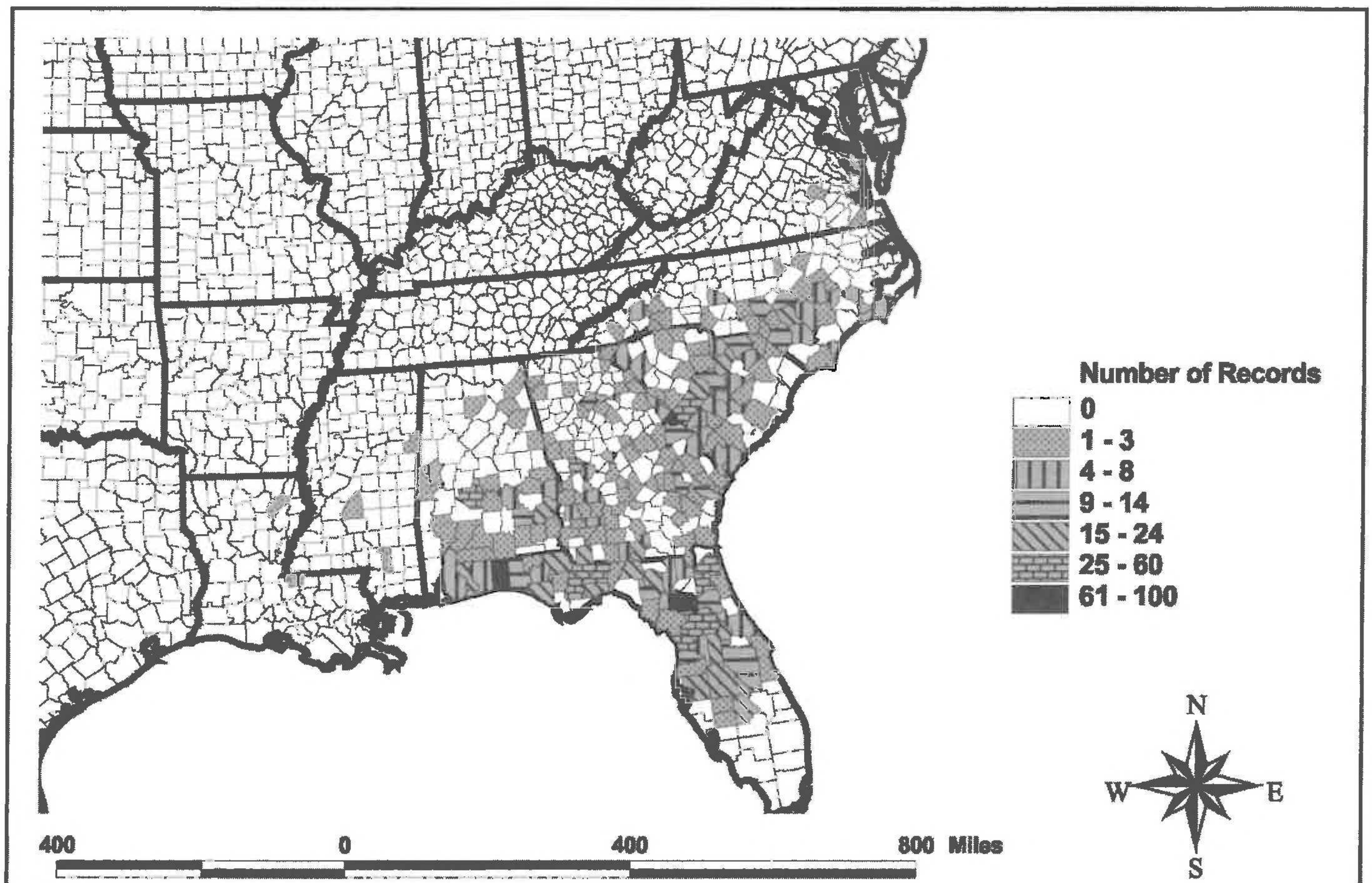

FIG. 1. County level distribution map of collated species.

entities indicated by adding a subscript to the number of a similar species. This compares to the 54 species recognized by Beadle (1902, 1903).

LII (leaf incision index or IFI in Latin) refers to the degree to which lobed leaves are dissected and ranges from 0% (without lobes) to 100% (cut to the midvein). Different sinuses may vary in LII and the value given refers to a typical value for the deepest sinus.

KEY TO SERIES LACRIMATAE

1. Habit often rather slender with ultimate branches particularly fine and pendulous and capable of movement in slight wind, else dwarf shrubs 0.5–1 m tall at maturity; twigs slender, often only 1.5 mm thick at about 5 cm from the tip; thorns fine, usually 1–4 cm long; blades usually 1–4 cm long, rather thin, drooping or fluttering in many species; fruit usually small, 6–8 mm diam., often yellow with a crimson cheek (subser. ***Tenues***).
   2. Leaf-blades 1–2(–3) cm long, as broad as long to slightly longer than broad (1–1.4:1).
      3. Dense twiggy shrubs seldom reaching 2 m tall, not notably lacrimate except sometimes in larger specimens; often flowering at 0.3 m tall; leaves glossy, semi-evergreen; blades < 2 cm long, ± isodiametric to broad obovate-truncate, not lobed to obscurely lobed across the terminal end, their margins ± entire to with conspicuous distal glandular-scalloped leaf-marginal teeth; extension shoot leaves very much like short-shoot leaves but larger and shallowly lobed _____ **1. C. lepida**
      3. Larger shrubs or small trees 2–7 m tall at maturity, nearly always ± evidently lacrimate; seldom flowering at less than 1 m tall; leaves not glossy, deciduous in fall; blades1–2(–3) cm long, nearly always broadest in apical half, broad obovate to obtrullate in general shape, usually with 1–2 rather short blunt to ± acute lobes distally per side; margins obscurely crenate to evidently crenatoserrate distally; extension shoot leaves frequently flaring outwards towards the tip, their large obtuse distal end being quite deeply and somewhat irregularly lobed _____ **2. C. egens**
   2. Leaf-blades 2–5 cm long, significantly longer than broad (1.4–2:1).
      4. Inflorescence branches and hypanthium ± glabrous.

5. Leaf-blades 1–1.75 cm long, teeth ± regular; petals 5–7 mm long; ripe fruit yellow with a red cheek ____ **3. C. lacrimata**
5. Leaf-blades 2.25– 4.00 cm long: teeth larger and more irregular; petals 7–9 mm long; ripe fruit deep or dull orange-copper ____ **3a. C.** sp. cf. **C. lacrimata**

4. Inflorescence branches and hypanthium pubescent to tomentose.
6. Leaf margins entire to subentire, or, if toothed, teeth very fine and entirely restricted to terminal part of leaf.
7. Leaf-blades oblong-obovate to very narrowly elliptic in general shape, margins entire to finely serrato-crenulate across the tips, sometimes with occasional small sharp teeth on the sides.
8. Leaf-blades narrow elliptic to narrow oblanceolate, 1.8–3:1; tips acute ____ **5. C. crocea** (typical form)
8. Leaf-blades proportionately broader, ± broad elliptic to broad rhombobovate to ± cuneate-spathulate, 1.5–2.0:1; tips rounded to flattish, at most the end very flat triangular or weakly mucronate.
9. Leaves proportionately longer, ± cuneate-spathulate ____ **5. C. crocea** (villaris form)
9. Leaves proportionately shorter, broad rhombobovate to ± broad elliptic ____ 5. **C. crocea** (incana form)

7. Leaf-blades narrowly rhombic in general shape, margins nearly entire ____ **8a. C.** sp.

6. Leaf margins distinctly, though often shortly, lobed and/or toothed.
10. Dense twiggy shrubs seldom reaching 2 m tall, not notably lacrimate except sometimes in larger specimens; often flowering at 0.3 m tall; leaf-blades cuneate to narrow elliptic, often almost parallel-sided, margins sharply toothed but not lobed, < 2 cm long ____ **4. C. munda**
10. Larger shrubs or small trees 2–7 m tall at maturity, nearly always ± evidently lacrimate; seldom flowering at less than 1 m tall; leaf blades 1.5–4 cm long, more obtrullate in general shape, ± lobed apically, margins sometimes crenate or crenato-serrate.
11. Leaf apex flattish to rounded or ± triangular; lobes subterminal, well-defined or sometimes obscure or obtuse; petioles fairly long (25–50% length of blade); blades thin, capable of fluttering in wind; thorns few or none, ± slender, ca. 2 cm long.
12. Leaf apices obtuse to flattish in general shape; lobes obscure or lacking young or more noticeable at maturity when small, subacute, margins evenly crenate-dentate ____ **5a. C. vicana**
12. Leaf apex rounded to triangular in general shape, with well-defined subterminal +/- acute lobes.
13. Blades usually 1–3 cm long, +/- stiff to fluttering in wind; petioles 5–10 mm long.
14. LII on broader leaves < 20%; leaves at anthesis larger than flowers; extension-shoot leaves unlobed or lobed much less than LII 80% ____ **6. C. quaesita**
14. LII on broader short-shoot leaves ca. 20%; leaves at anthesis about size of flowers; larger extension-shoot leaves deeply lobed (LII to 80%) ____ **6a. C.** sp. aff. **resima**

13. Blades often reaching 3–4 cm, though normally some shorter, larger able to flutter in the wind; petioles 10–20 mm long ____ **7. C. floridana**
11. Leaf apex rounded to ± triangular with obscure or obtuse lateral lobes; petioles fairly short (< 25% length of blade); blades stiff and non-fluttering in wind; very thorny, thorns ± stout, 3–5 cm long ____ **8. C. invicta**

1. Habit more robust and stocky though ultimate twigs usually ± pendulous in mature specimens; twigs thicker, at least 1.5 mm and often 2–3 mm wide at about 5 cm from the tip; thorns, if present, normally relatively stout, 2–5 cm long; blades often rather thick and stiff, commonly 2.5–4.0 cm long; fruit usually larger, 8–12 mm diam., often copper-colored at maturity (subser. ***Robustae***).
15. Leaves in most specimens without lobes, but when present, these subterminal, few and obscure and very short-triangular or merely undulate, margins toothed or not.
16. Leaf marginal teeth, if any, merely denticulate.
17. Thorns generally absent; most leaf-blades 2.5–4 cm long; flowers 15–20 mm diam.; fruit 10–12 mm diam.
18. Leaf-blades 2–4 cm long, many at least twice as long as broad, ± cuneate in general shape; tip obtuse to cuspidate, sides evenly tapered from just below broadest point to junction with petiole; petiole 10–15 mm long; leaves 'floppy' in nature. ____ **16. C. lassa**
18. Leaf-blades often 2.0–3.5 cm long, 1.2–1.8 x as long as broad, usually proportionately broader than above (but occasionally proportionately narrower), general shape somewhat

variable, ± obovate, broad rhombobovate to ± broad elliptic, or even suborbiculate; tip varied in form, acute to subcuspidate, alternatively truncate-obtuse; and sometimes obscurely undulately lobed around broadest point; petiole 3–8 mm long, leaves stiff _____ **11. C. integra**

17. Thorns long, numerous; leaf-blades 2–2.5 cm long; flowers 12–15 mm diam.; fruit 6–9 mm diam _____ **12. C. colonica**

16. Margins with well-defined teeth.

19. Hypanthium and pedicels tomentose.

20. Margins with fine regular teeth; leaves lacking lobes.

21. Leaf-blades broad-elliptic to narrow obovate or obovate in general outline, obtuse to somewhat cuspidate across the tip; inflorescences 2–7-flowered; flowers 14–25 mm diam.; thorns absent or scarce, if present, 20–30 mm long.

22. Leaf-blades narrow obovate to broad elliptic in general shape; apex rounded to broadly acute; flowers 13–20 mm diam _____ **9. C. condigna**

22. Leaf-blades broad-oblong to cuneate, ± flattened at apex or slightly cuspidate; flowers 22–25 mm diam. _____ **10. C. alabamensis**

21. Leaf-blades obovate to obovate-rhombic in general outline, generally subacute to obtuse the tip; inflorescences 1–3-flowered; flowers ca. 12 mm diam; thorns abundant, 35–50 mm long _____ **13. C. pexa**

20. Margins with coarse, irregular teeth, some leaves with one shallow lobe per side _____ **15b. C. pulla**

19. Hypanthium and pedicels glabrous to thin-pubescent.

23. Leaf marginal teeth finely dentate; leaves with 2–4 pairs of lateral veins; twigs barely flexuous; inflorescence branches subglabrous; styles and nutlets 2–3 _____ **14. C. teres**

23. Leaf marginal teeth coarse and/or sharp, dentate; leaves with 1–4 pairs of lateral veins; many twigs evidently zigzag; inflorescence branches pilose-pubescent or subglabrous; styles and nutlets 3–5.

24. Leaf-blades quite large, 2.0–4.5 cm long; pairs of lateral veins 2 –4; inflorescence branches thinly to moderately pilose-pubescent _____ **15. C. florens**

24. Leaf-blades smaller, 1.5–3.5 cm long; pairs of lateral veins 1–2; inflorescence branches subglabrous _____ **15a. C. attrita**

15. At least 40% of leaf-blades distinctly lobed, but sometimes very shallowly; margins often also toothed.

25. Blades 2–5 cm long at maturity; most leaves ± narrow in general shape, many >1.75:1, elliptic to narrow-obovate or narrow-obtrullate.

26. Mature leaf-blades 30–50 mm long, floppy; 1–2 small subterminal lobes per side; flowers 17–20 mm wide _____ **17. C. lanata**

26. Mature leaf-blades 15–30 mm long, stiff; lobes well-defined and ± sharp (except sometimes in *C. lancei* where many sometimes lobeless); flowers 14–16 mm wide.

27. Lobes (frequently absent) 0–1 per side, small, subacute; teeth crenate to crenate-serrate; lateral veins 1–3 per side; inflorescences 3–7-flowered _____ **20. C. lancei**

27. Lobes (present on all leaves) 1–2 per side, and teeth well-defined, sharp; lateral veins 3–5 per side; inflorescences 2–4-flowered _____ **21. C. senta**

25. Blades 1.5–4 cm long at maturity; two-thirds or more leaves broader in general shape, mainly ca. 1.4–1.6:1.

28. Blades usually broadest towards the tip, ± broad-obtrullate to obtrullate-rhombic or obovate in general shape, rather longer than wide, lobes (0–)1–3 per side subterminal, distinct; anthers cream.

29. Leaf-blades stiff, often persistently lanate; lobes 1–2 per side, subterminal to lateral, generally rather obscure _____ **18. C. furtiva**

29. Leaf-blades stiff or floppy, persistently lanate or not; at least one prominent subterminal lobe per side.

30. Inflorescences 2–4-flowered; leaves lanate initially, remaining pubescent, lobes 1–2 per side, sharp at least when young; teeth sharp or not.

31. Leaf-blades obovate-obtrullate in general shape; lobes 1–2 per side; marginal teeth small, crenate-serrate _____ **19. C. meridiana**

31. Leaf-blades obovate to broad-obovate in general shape; lobes, usually 2 per side; marginal teeth very sharp _____ **22. C. dispar**

30. Inflorescences 3–7-flowered; leaves glabrescent; lobes usually1(–0) per side, broad but acute; marginal teeth very small, sharp _____ **23. C. exilis**

28. Blades broadest in the middle, rhombic in general shape, a little longer than wide, with one distinct ± acute lobe per side; anthers pink to purple _____ [**C. egregia** (ser. **Apricae**)]

Subseries **Tenues** J.B. Phipps, subser. nov. (spp. 1–8). TYPE SPECIES: *C. recurva* Beadle.

Habitus vulgo aliquantum tenuis cum ramulis ultimis praecipue gracilibus pendulisque et capacibus motus in vento exiguo, duobus speciebus fruticosis nanis 0.5–2.0 m altis in maturitate exceptis; ramuli graciles, saepe solum 1.5 mm crassi ca. 5 cm ab apice; spinae graciles, vulgo 1–4 cm longae; laminae vulgo 1–4 cm longae, aliquantum tenues, demissae vel tremaefactae in vento levissimo in multibus speciebus; fructus vulgo parvi 6–8 mm diametro, pyriformes vel late-ellipsoidei vel interdum suglobosi, saepe flavi cum carmesinis genis.

Habit usually rather slender with ultimate branches particularly fine and pendulous and capable of movement in slight wind except in two dwarf shrubby species 0.5–2.0 m tall at maturity; twigs slender, often only 1.5 mm thick at about 5 cm from the tip; thorns fine, usually 1–4 cm long; blades usually 1–4 cm long, rather thin, drooping or fluttering in many species; fruit usually small, 6–8 mm diam., pyriform to broad ellipsoid, occasionally subglobose, often yellow with a crimson cheek.

1. Crataegus lepida Beadle, Biltmore Bot. Stud. 1:36. 1901. (**Fig. 2**). TYPE: U.S.A. GEORGIA. Ware Co.: Waycross, 24 Aug 1901, *C.D. Beadle 3041* (LECTOTYPE, selected here, US).

Shrubs, often less than 1 m tall but sometimes reaching 2 m, dense and twiggy, not notably lacrimate except sometimes in larger specimens, capable of flowering at 0.3 m tall; bark of trunk scaly, dark grey; young twigs appressed-pubescent, 1-year old twigs brown, zig-zag at nodes; thorns 0.6–2 cm long, fine, straight. Leaves late deciduous to wintergreen; petioles 25–40% length of leaves, pubescent, glandular; blades 0.6–1.5 cm long, broadly obovate to± isodiametric in general shape; tip very obtuse or with a slight apiculus, base abruptly contracted into the winged upper portion of the petiole; sometimes with extremely shallow lobes across apical third; margins minutely glandular-crenate to sometimes with conspicuous distal glandular-scalloped teeth distally; venation craspedodromous, 1–2 main lateral veins per side; surfaces very slightly appressed-pilose above when young, more particularly so on the veins, ± pubescent below, especially on the veins; coriaceous and often somewhat glossy; stipules herbaceous, falcate, gland-margined. Inflorescences 1–3-flowered; branches appressed-pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers ca. 12 mm diam.; hypanthium externally pubescent; calyx-lobes abaxially pubescent, triangular, margins ± entire; petals ± circular, white; stamens 20, anthers ivory; styles 3–4. Fruit 8–13 mm diam., slightly longer than broad, ± pubescent, yellow-green to yellow or orange when ripe, black gland-dotted; calyx-lobes recurved or broken off; nutlets ca. 3, dorsally grooved, sides plane.

Common name.—Dwarf Hawthorn.

Distribution (Fig. 3).—This is a scarce species occurring in the southeastern United States in scattered localities from central Florida to Georgia and South Carolina where it is found in dwarf scrub. Remarkably, a sterile specimen, *Thomas 57507*, from Louisiana, appears to be this species.

In central Florida plants flower and begin their extension growth very late, in May, long after growth of other nearby plants has started, however, further north, anthesis about the second week of April seems more normal for this species. The former are the most wintergreen populations. Particularly small-leaved specimens with numerous, small, sharp marginal teeth may represent *C. garrettii* of Murrill.

This is a dwarf semi-evergreen shrub, very attractive, with dark, glossy, often suborbiculate leaves that are very striking in the field. Larger specimens might be confused with *C. egens*.

2. Crataegus egens Beadle, Biltmore Bot. Stud. 1:85. 1902. (**Fig. 4**). TYPE: U.S.A. FLORIDA. Liberty Co.: Bristol, 1 Apr 1901, *T.G. Harbison 4037* (LECTOTYPE, selected here: GH; ISOTYPES: A, US).

? = *Crataegus cirrata* Beadle, Biltmore Bot. Stud. 1:101. 1902. TYPE: U.S.A. ALABAMA. Russell Co.: Girard, no date, *C.D. Beadle 4122* (LECTOTYPE, selected here: US):

Comment.—Beadle 4123, also from Girard, was collected 9 Apr 1910.

Shrubs or small trees to 5 m tall, slender, with pendulous branches, seldom flowering at less than 1 m tall; extending shoots white-canescent; 1-year old purple-brown, older darker or grayer; unarmed or with

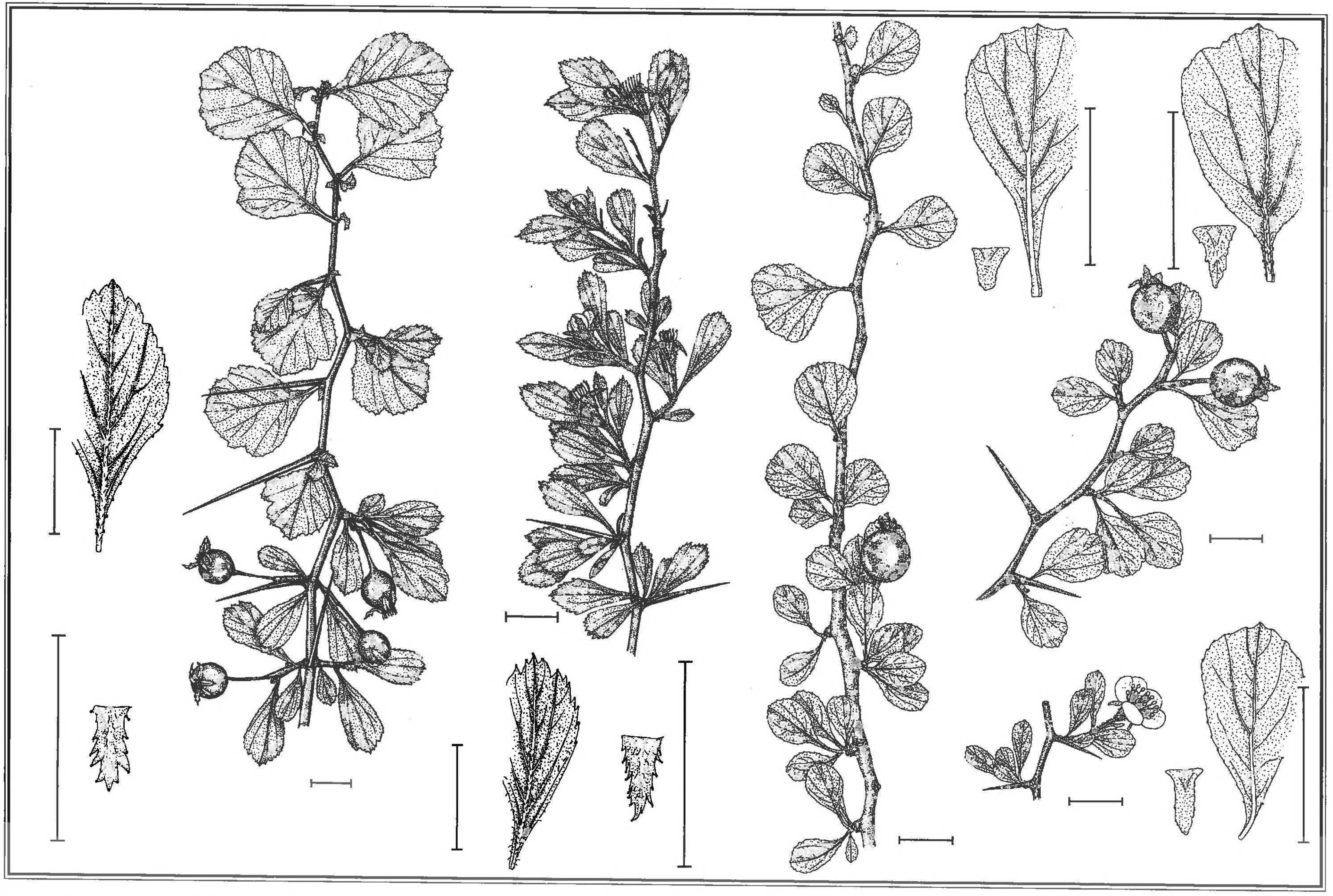

Fig. 2. Line drawings of: *Crataegus lepida* (right) from *S. Riefler s.n.* (UWO), flowering and *J.B. Phipps 6992* and *J.B. Phipps 6749* (both UWO), fruiting; and *C. munda* (left) from *R. Kral 1969* (TENN), flowering and *K.E. Rogers 1404A* (GH) and *W. Faircloth 3579* (GA), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

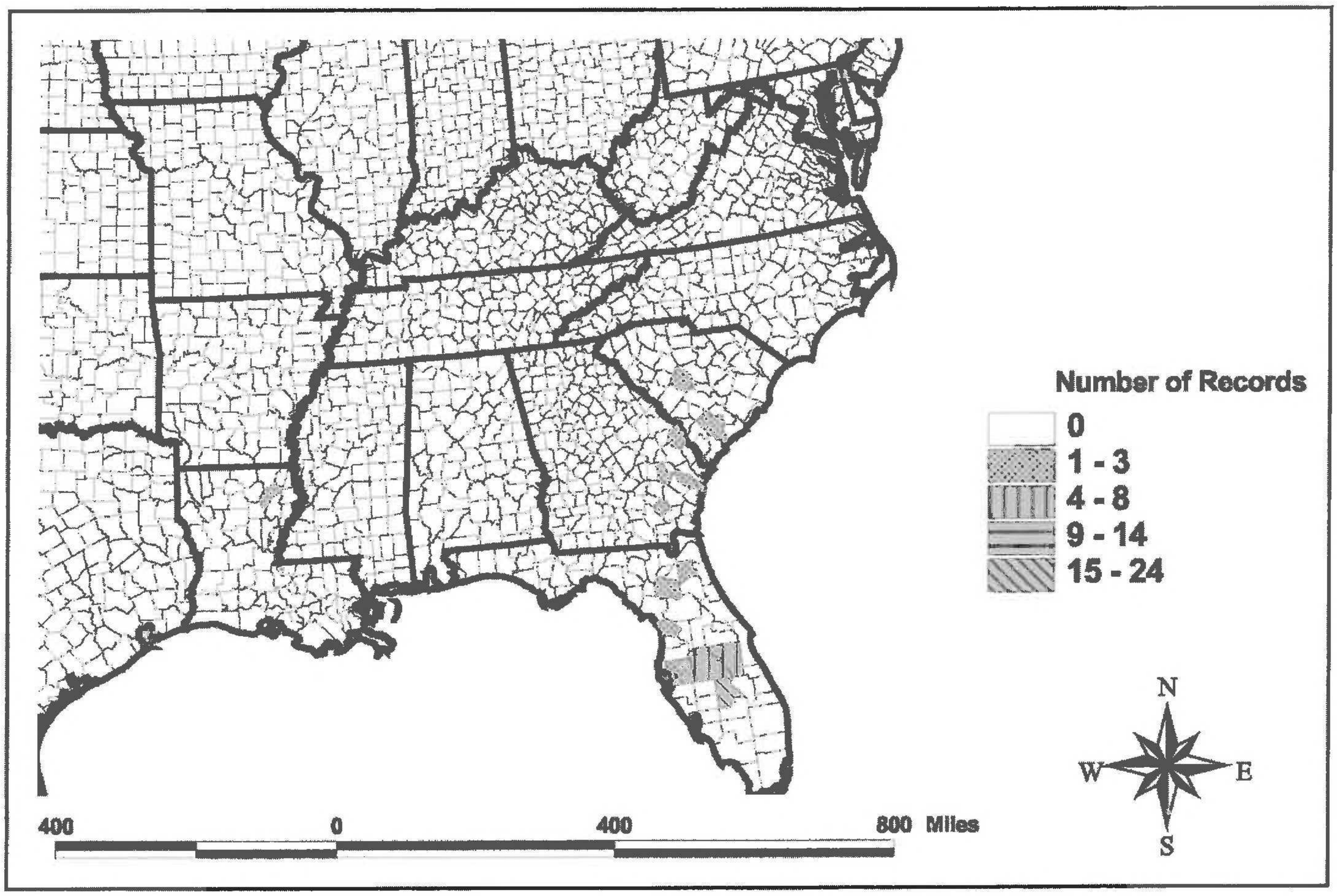

Fig. 3. County level distribution map of *Crataegus lepida* (range recently extended to Cook Co., Georgia).

thorns 1–2 cm long, fine, straight or slightly recurved, blackish to deep gray. Leaves deciduous; petioles 6–18 mm long, very slender below the wing margin, pubescent, gland-margined; blades 1–2(–3) cm long, short-obtrullate to broadly obovate in general shape, broadest in the apical half, cuneate to slightly rounded at the base and tapering into winged petioles, subacute at the apex, usually with 1–2 short, generally subacute lobes per side across the apical end; margins obscurely crenate to evidently crenotoserrate in distal half, glandular; venation craspedodromous, main veins 1–2 per side, exiting at or beyond at the widest part; when young thinly hairy, soon glabrate except on the veins below. Inflorescences 1–2-flowered; branches densely appressed white-pubescent, bearing a few deciduous, linear, membranous, gland-margined bracteoles. Flowers 12–16 mm diam.; hypanthium white-tomentose; calyx-lobes 2–3 mm long, pubescent externally, gland-margined; petals ± circular, white; stamens 20, anthers ivory; styles usually 3. Fruit 8–10 mm diam., subglobose, ± glabrous, deep dull yellow or same with red cheek; calyx-lobes appressed, sometimes late circumscissile; nutlets ca. 3, dorsally sulcate, sides smooth.

Distribution (Fig. 5).—This species is found in the southeastern United States where it is locally common in Georgia and north central Florida, outliers occurring in Clark and Henry Cos., Alabama and Jasper Co., South Carolina. There used to be a fine specimen, fully 6 m tall, on the University of Florida campus at Gainesville in the 1980s.

The drooping, long-petiolate leaves are very small and short-obtrullate to broadly obovate in shape. In general the proportions are broader than 1.4:1. There is some variation in leaf lobing from quite sharp to rather blunt and even obscure. An additional characteristic of this species is the way in which extension shoot leaves may flare outwards towards the tip, their obtuse and large terminal end being quite deeply and somewhat irregularly lobed. Specimens of *C. egens* of lower stature (1–2 m tall) may be distinguished from *C. lepida* by that species' nearly or completely unlobed, coriaceous and shiny leaves. Specimens with

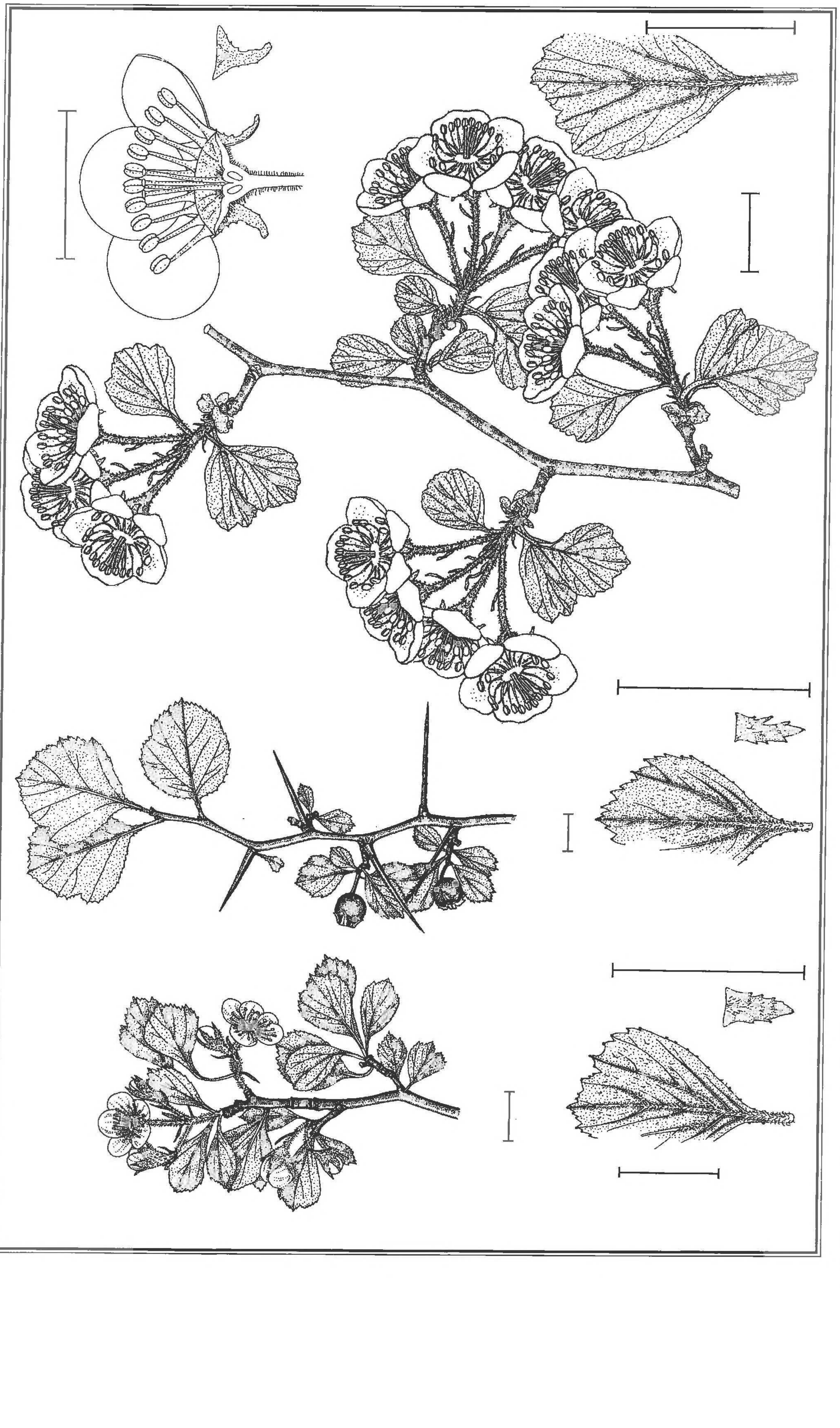

Fig. 4. Line drawing of *Crataegus egens* from *T.G. Harbison 6023* (NCU) and *J.B. Phipps 6652* (UWO), left and right flowering respectively and *M.L. Fernald & B. Long 6604* (US), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

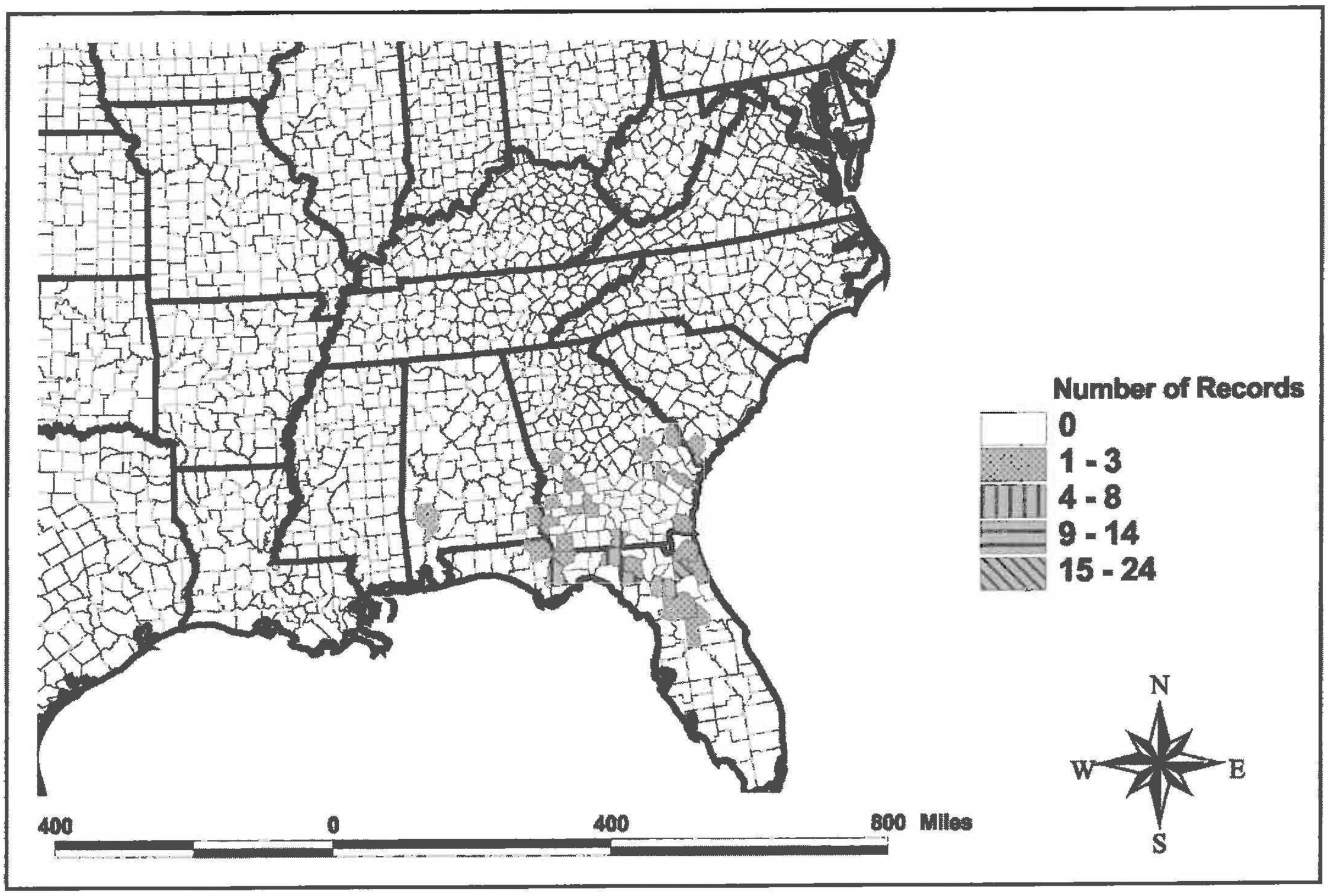

Fig. 5. County level distribution map of *Crataegus egens*.

leaves of the above general shape but more elongated may be referred to *C. cirrata* and are thus somewhat intermediate with *C. floridana*.

3. Crataegus lacrimata Small, Torreya 1:97. 1901. (**Fig. 6**). See also Pl. 27 in Phipps et al. (2003). Type: U.S.A. Florida. Okaloosa Co.: Crestview, 8 Apr 1899, *C.D. Beadle 17* (lectotype, selected here: US).

Shrubs to 5(–8) m tall; twigs zig-zag at the nodes; growing shoots pubescent, 1 to 2-year old shoots gray or purple-gray; thorns 1.5–3.0 cm long, straight, purple-gray. Leaves deciduous; petioles 2–6 mm long, slender, pubescent; blades 1–2 cm long, oblong, ± narrowly obtrullate or occasionally elliptic, the tip truncate to obtuse to occasionally cuspidately subacute, subentire to toothed in distal half or very occasionally very slightly lobed; veins 1–2 per side, exiting in the distal half of the leaf; surfaces glabrous. Inflorescences 1–3-flowered; pedicels glabrous, bearing ± caducous, linear, membranous, eglandular to more usually few-gland-margined bracteoles; flowering 8 April '91 in the Florida panhandle. Flowers ca. 15 mm wide; hypanthium externally glabrous; calyx-lobes 2–3 mm long, triangular, abaxially glabrous, margins ± entire; petals ± circular, white; stamens 20, anthers cream; styles 3–4. Fruit ca. 8 mm wide, ± orbicular, glabrous, yellow, yellow blushed red, or red; calyx remnants patent-reflexed; nutlets dorsally grooved, sides plane.

Common name.—Weeping Hawthorn.

Distribution (Fig. 7).—This species is found over the Florida panhandle and adjacent Alabama and extends through Georgia into South Carolina. It is extremely abundant between Pensacola and Panama City, and locally common elsewhere in pinewoods and open scrub.

Crataegus lacrimata occurs as an attractive, ± upright, usually single-stemmed shrub with slender ± weeping branches and small, narrow, glabrous, bright green leaves and is easily recognized among ser. *Lacrimatae* from all except the species 3a. This and the next are the only members of ser. *Lacrimatae* to commonly possess eglandular bracteoles.

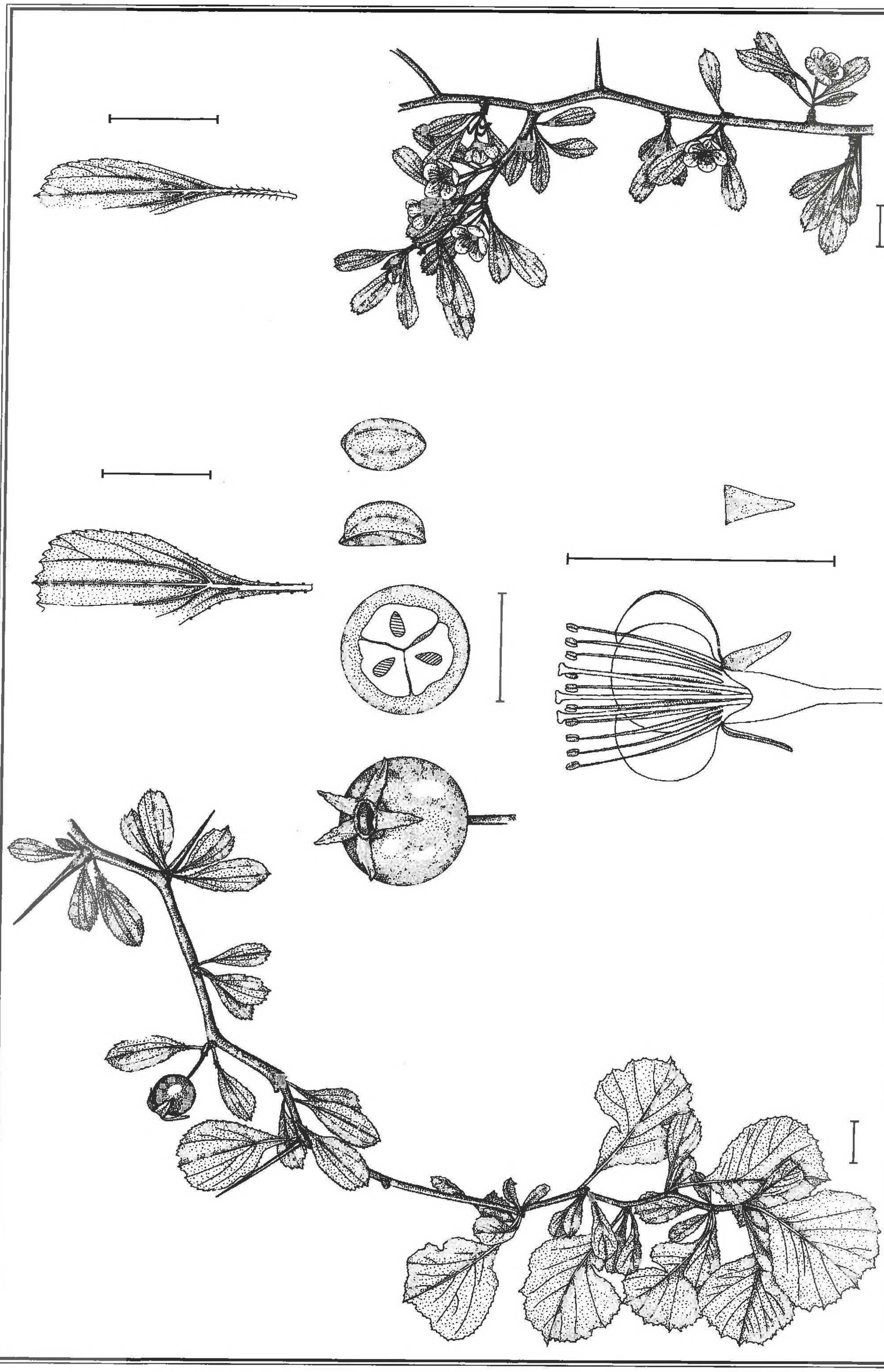

Fig. 6. Line drawing of *Crataegus lacrimata* from *R. Kral 26149* (TENN), flowering *and R.K. Godfrey 54630* (FSU) and *R. Kral 31806* (TENN), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

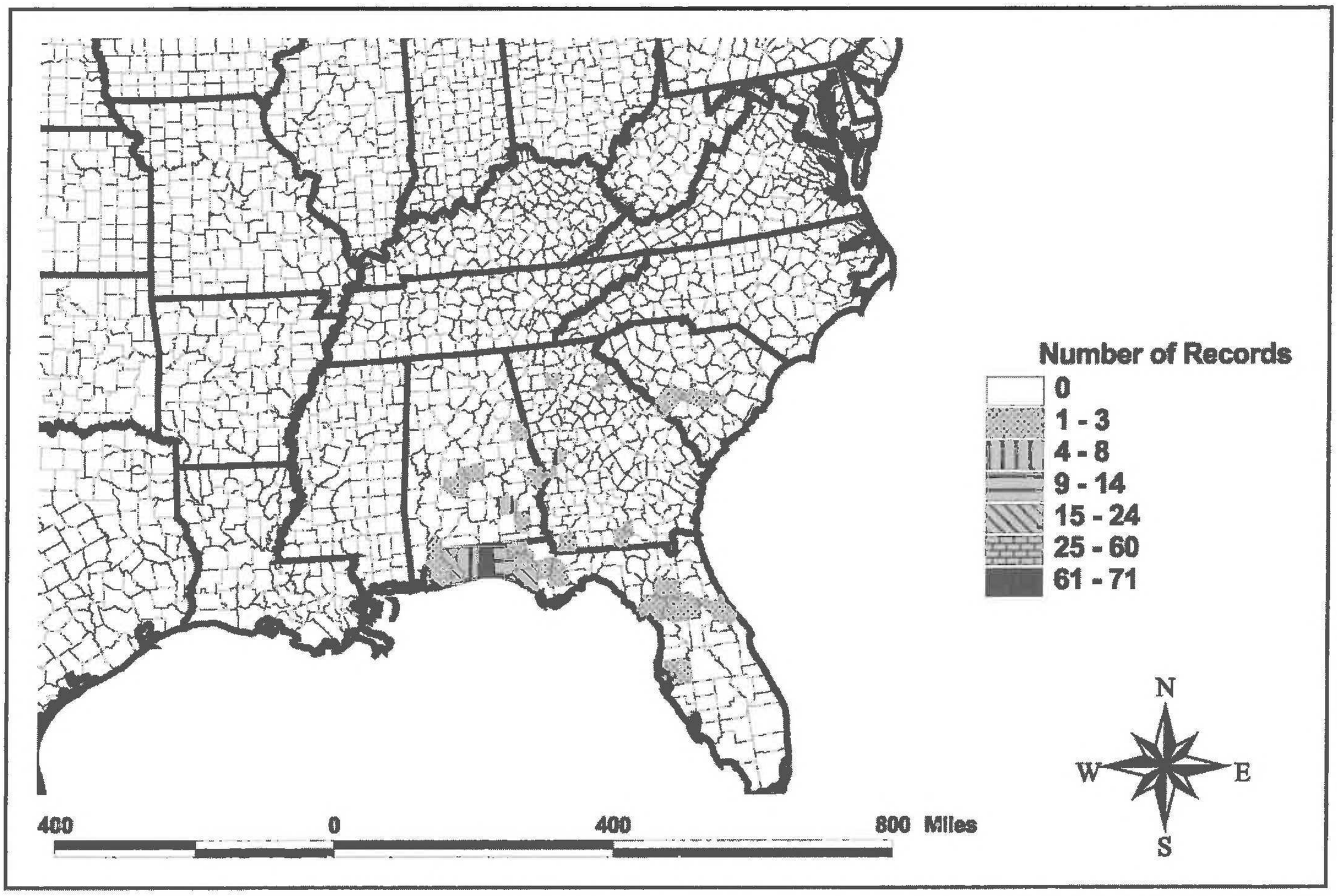

Fig. 7. County level distribution map of *Crataegus lacrimata*.

3a. Crataegus sp. cf. **lacrimata** Small, Torreya 1:97. 1901.

Shrubs 2–4 m tall; twigs of the current year glabrous, twigs zig-zag at nodes; 1-year old twigs deep dull purple; thorns mostly 1–4 cm long, few to numerous, straight. Leaves deciduous; petioles 2–6 mm long, pubescent, glandular; blades 2–4 cm long, narrowly oblong to narrowly oblanceolate, unlobed; distal third markedly toothed with gland-dotted teeth; base narrowly cuneate; venation craspedodromous with about 2 veins per side diverging at a narrow angle from the midrib and exiting in the distal quarter or third; mostly glabrous except for tufts of hairs in the axils of the veins below. Inflorescences 1–3(–4)-flowered; branches glabrous, bearing a few deciduous, linear, membranous, ± eglandular, bracteoles. Flowers ca. 18 mm diam.; hypanthium externally glabrous; calyx-lobes narrow-triangular, glabrous, margins gland-toothed; petals ± circular, white; stamens 20, anther cream; styles 3. Fruit 7–15 mm diam., ± orbicular, glabrous, usually deep or dull orange-copper when ripe; calyx remnants variably present; nutlets ca. 3, dorsally grooved, laterally smooth.

Distribution.—This entity occurs in the southeastern USA from the Florida panhandle to Georgia and South Carolina. It is found in open scrubland, principally on sand or sand-plains where it is locally common.

It is very similar to *C. lacrimata* but differs in its conspicuously larger leaves, flowers and fruit.

4. Crataegus munda Beadle, Biltmore Bot. Stud. 1:38. 1901. (**Fig. 2**). Type: U.S.A. South Carolina. Lexington Co.: Batesburg, 31 Jul 1900, *C.D. Beadle 2821* (lectotype, selected here: US).

? = *Crataegus geniculata* Ashe J. Elisha Mitchell Sci. Soc. 17:16. 1900. *Comment.*—no authentic material of this taxon can be located but the protologue suggests something very like *C. munda* in whose main range it lies.

Stiff, compact thorny shrubs 0.5–2 m tall, or occasionally (? misidentified) much taller; twigs zig-zag, those of the season densely appressed-pubescent, green, 1-year old twigs purple brown-gray; thorns 1–3 cm

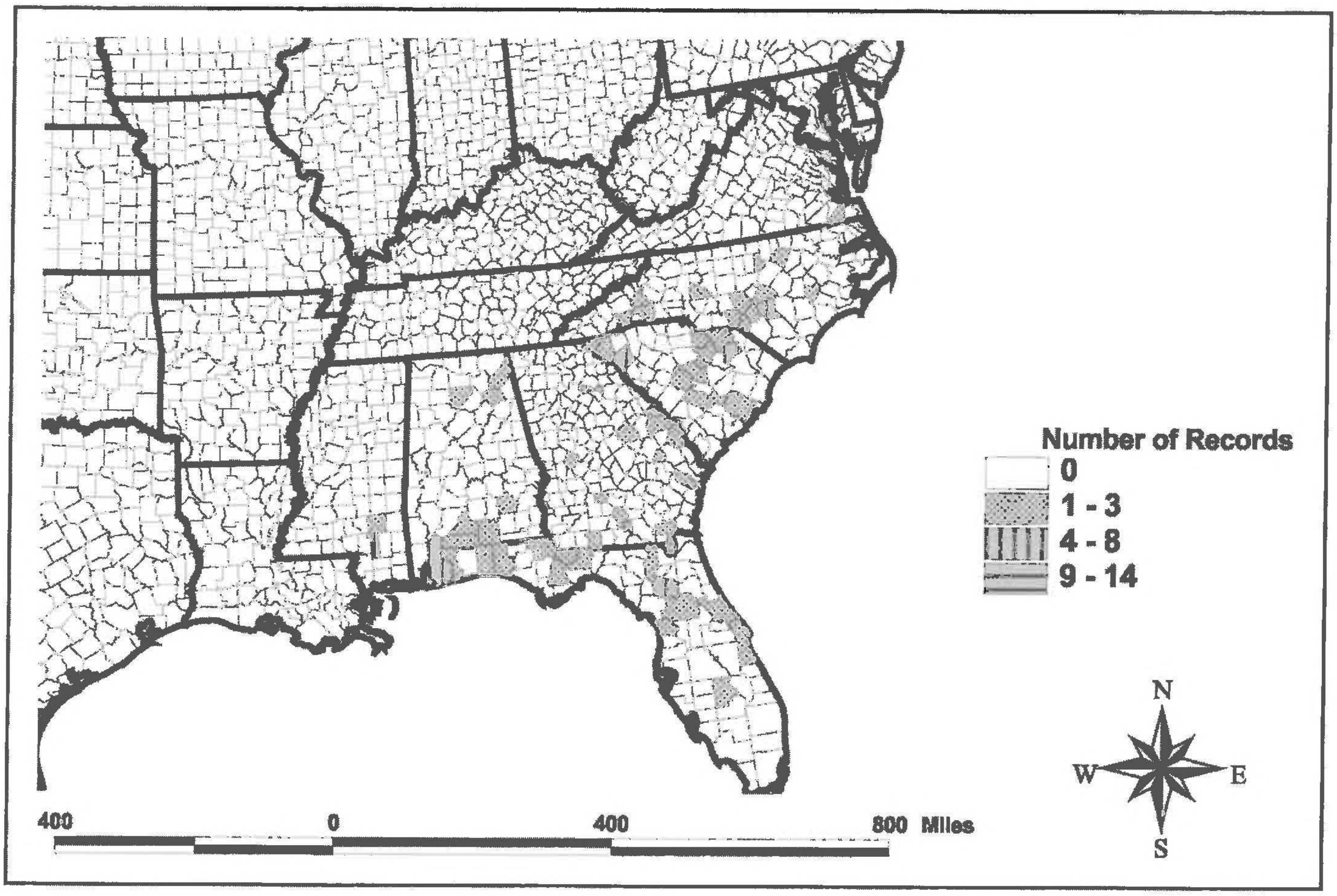

Fig. 8. County level distribution map of *Crataegus munda*.

long, slender, ± straight, purple-brown at 2 years. Leaves deciduous; petioles 0–5 mm long, winged above, pubescent only when young, glandular; blades 8–18 mm long, narrowly obovate to cuneate to oblanceolate, with ± straight sides, tapered to the base; tip typically blunt, and sometimes obscurely 3–lobed, more rarely acute; margins finely serrate-crenate in distal half, the teeth glandular; venation craspedodromous with 1–2 pairs of lateral veins, these exiting above the broadest part of the leaf; thinly pubescent above and below even at maturity, ± densely pubescent below near the vein axils; dark green when young, generally shiny and thin-chartaceous at maturity; stipules thin, approximately obtriangular. Inflorescences 1–2(–3)-flowered; branches ± thinly appressed-pubescent, bearing deciduous, linear, membranous, gland-bordered bracteoles. Flowers ca. 12–15 mm diam.; hypanthium externally pubescent below; calyx-lobes triangular, gland-toothed, abaxially pubescent mainly; petals ± circular, white; stamens 20, anthers ivory or rarely light purple (*C. visendiformis*); styles 3–5. Fruits ca. 7–8 mm diam., subglobose, subglabrous, red; calyx remnants appressed; nutlets 3–5, dorsally sulcate, laterally smooth.

Distribution (Fig. 8).—This is one of the most widespread species in the series. It occurs from North Carolina to central Florida, southeastern Alabama and South Carolina with scarce outliers occurring in Mississippi (Jones, Forest Cos.) and Virginia (Nansemand Co.). It is found mainly on sandy soils, in open brushy places or among pine.

Crataegus munda has a stiff compact habit, like *C. lepida*, that generally lacks the pendulous twigs so generally typical of the series. Herbarium specimens of *C. munda* somewhat resemble *C. lacrimata,* but, instead, have pubescent pedicels and shorter petioles, are more likely to have pointed leaves and have more pronounced marginal teeth. Similarities may also exist to narrower forms of *C. recurva*, which, however, has more generally pendant, ± entire leaves, usually much longer petioles and more nearly tomentose inflorescences and hypanthia. *Crataegus munda* is one of the few species that regularly flowers at under 1 m tall and resembles *C. lepida* in this respect. It has been recorded with attractive pink flowers east of Geneva, Georgia.

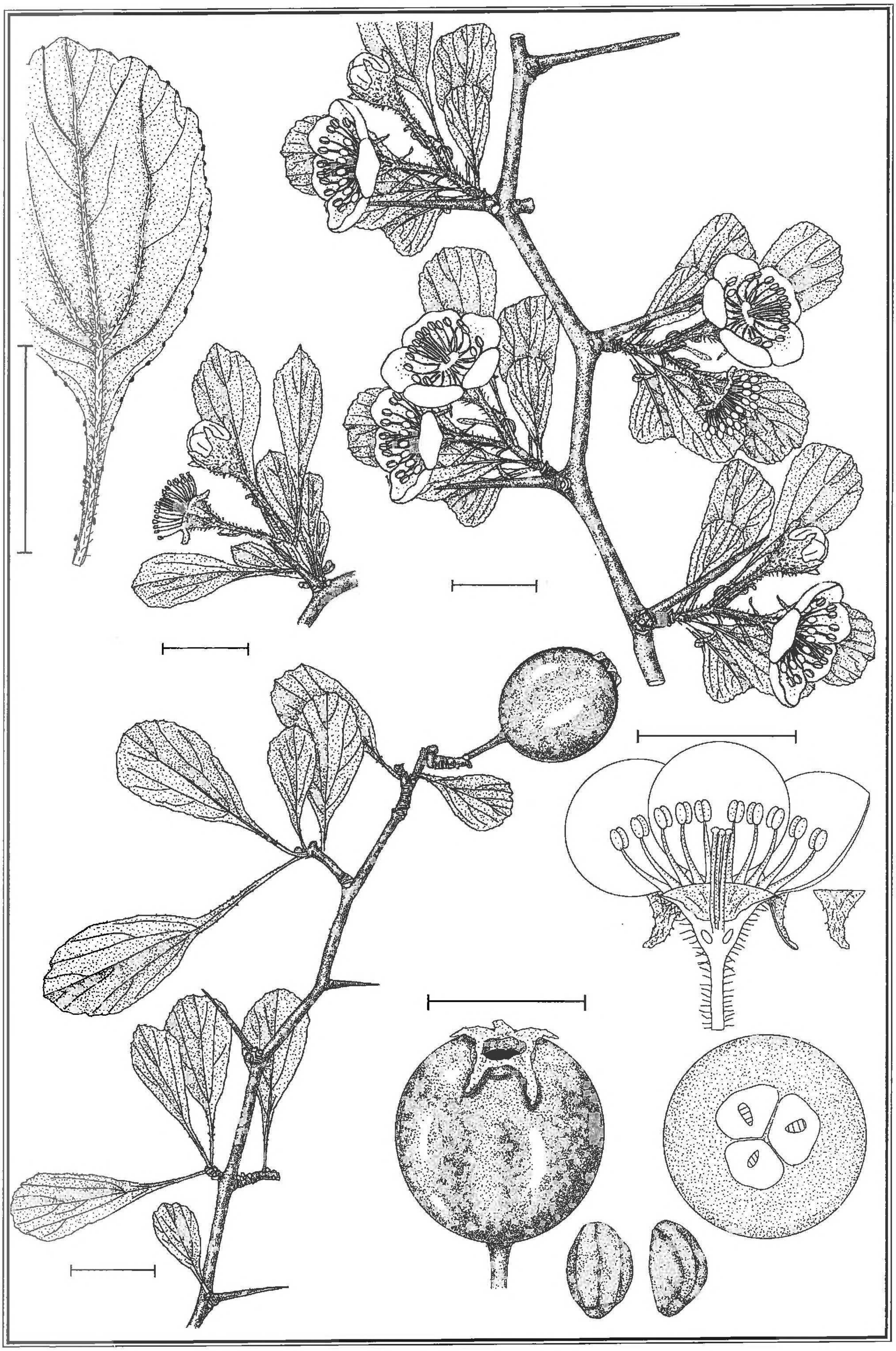

Fig. 9. Line drawing of *Crataegus crocea* from *J.B. Phipps 5132* (UWO) and *R.K. Godfrey 79497* (FSU), flowering and *J.B. Phipps 6762* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

A similar form perhaps keying out to *C. geniculata* Ashe, with generally larger, more sharply toothed leaves, 3–4 veins per side, larger flowers with less hairy pedicels and subpyriform fruit has been found by R. Lance in northeastern Georgia.

5. Crataegus crocea Beadle, Biltmore Bot. Stud. 1:113. 1902. (**Fig. 9**). TYPE: U.S.A. FLORIDA. Marion Co.: Citra, 21 Aug 1901, *C.D. Beadle 4445*[2] (LECTOTYPE, selected here: US).

Crataegus curva Beadle, Biltmore Bot. Stud. 1:109. 1902. TYPE: U.S.A. FLORIDA. Duval Co.: Jacksonville, 15 Aug 1901, *C.D. Beadle 4082*[2] (LECTOTYPE, selected here: US). U.S.A. FLORIDA. Duval Co.: Jacksonville, 30 Mar 1901, *C.D. Beadle 4082, fragment* (EPYTYPE, selected here, NY).

Crataegus frugalis Beadle, Biltmore Bot. Stud. 1:100. 1902. TYPE: U.S.A. GEORGIA. Dougherty Co.: along river above Albany, 3 Apr 1901, *C.D. Beadle 4092* (LECTOTYPE, here selected, US).

Crataegus recurva Beadle, Biltmore Bot. Stud. 1:106. 1902. TYPE: U.S.A. FLORIDA. Marion Co.: Ocala, Mar 1901, *C.D. Beadle 4007*[2] (LECTOTYPE, here selected, A).

Crataegus villaris Beadle, Biltmore Bot. Stud. 1:108. 1902. TYPE: U.S.A. FLORIDA. Marion Co.: Citra, 27 Mar 1901, *C.D. Beadle 4042* (LECTOTYPE, selected here: US).

? = *Crataegus adusta* Beadle, Biltmore Bot. Stud. 1:110. 1902. TYPE: U.S.A. FLORIDA. Alachua Co.: Gainesville, 1901, *C.D. Beadle 4065* (LECTOTYPE, selected here: US)

? = *Crataegus incana* Beadle, Biltmore Bot. Stud. 1:113. 1902. TYPE: U.S.A. FLORIDA. Liberty Co.: Bristol, 24 Aug 1901, *T.G. Harbison 4918* (LECTOTYPE, selected here: US). U.S.A. FLORIDA. Liberty Co.: Bristol, 29 Mar 1901, *T.G. Harbison 4020, fragment* (EPITYPE, selected here, NY).

Shrubs or small trees 2–6 m tall; habit quite lacrimate; twigs of the season densely appressed white-pubescent, 1-year old gray-brown to purple-brown; older gray; thorns 1–4 cm long, none to plentiful, straight, ± fine, purple-brown to gray. Leaves deciduous; petioles 2–6 mm long, densely pubescent, glandular at least initially; blades 1–2.5 cm long, narrowly oblong to narrowly oblanceolate or narrow-elliptic or more commonly spatulate in general shape, generally tapered rather fast into a cuneate base, the tip subacute, obtuse or truncate, ± entire or occasionally obscurely lobed; margins gland-dotted when young, occasionally rather obscurely crenate-serrate at the tip; venation craspedodromous with 1–4 narrowly diverging veins per side exiting beyond the widest part of the leaf; conspicuously pubescent along the veins below, slightly so above; often rather densely pubescent at first on the adaxial and slightly pubescent on the abaxial surface, later glabrescent. Inflorescences 1–3-flowered; branches densely appressed- white- pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 16–18 mm diam.; hypanthium externally copiously white-pubescent; calyx-lobes ca. 4 mm long, narrow-triangular, gland-margined, abaxially thinly pubescent; petals elliptic or ± circular, white; stamens 20, anthers cream; styles usually 3. Fruit ca. 8 mm diam., subglobose, glabrescent to somewhat pubescent, yellow to copper-orange or reddish-orange when-ripe; calyx remnants reflexed when present, sometimes circumscissile; nutlets 3, dorsally grooved, laterally smooth.

Distribution.—*Crataegus crocea* ranges from southwestern Alabama to central Florida and through Georgia and South Carolina just into North Carolina (Fig. 10) where it is locally common on sand plains and in open scrubby places. It is particularly abundant in Alachua and Marion Cos., Florida.

Crataegus crocea is somewhat variable and will normally be found annotated as *C.recurva* in my annotations. The form selected as typical actually represents one pole of variation. However, it is the most distinctive compared to other taxa in ser. *Lacrimatae* and is locally common at least in northern Florida. It has narrow-elliptic leaves perfectly smooth in outline, acute at the apex, the distal margins sometimes finely denticulate. Its median leaf shape is similar to the narrowest leaf in the flowering inset. Other forms with similar leaves may be referred to *C. frugalis* and, if with larger leaves at maturity sometimes slightly lobed distally, to *C. recurva. Crataegus curva* has a somewhat similar leaf form with broader and shorter leaves and shorter petioles. Commonly, however, leaves of specimens here referred to *C. crocea* are wider than the type and somewhat spatulate, as illustrated in Fig. 9 - these represent *C. villaris* (which is keyed out). All the foregoing forms intergrade. Forms such as *C. adusta* which have somewhat similar shaped leaves to those of *C. villaris* (both larger in all parts than typical *C. crocea*) and often with strongly crenulate to obscurely lobed leaf apices) are intermediate with *C. condigna*. Finally, other specimens with shorter and broader leaves,

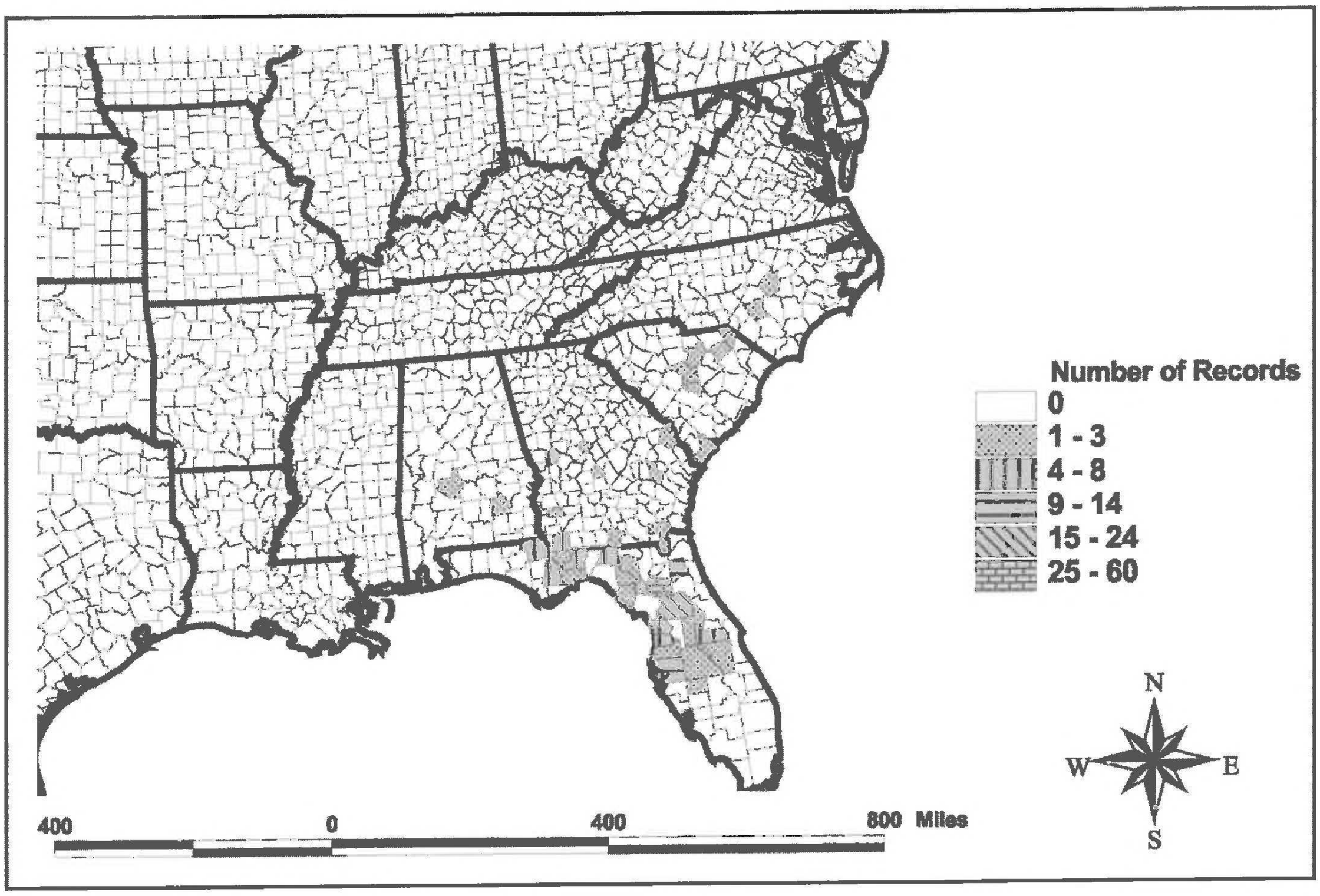

Fig. 10. County level distribution map of *Crataegus crocea*.

rather like those of *C. dapsilis* (ser. *Robustae*), but which retain the typically small fruit of subser. *Tenues* are referred to *C. incana*, a form characterized by a particularly dense tomentum when young.

There should usually be no difficulty separating *C. crocea* from *C. munda* of this subseries and from the small-leaved *C. condigna* of subser. *Robustae*, both of which have prominently toothed leaf margins, nor from *C. lacrimata* with its glabrous inflorescences. Larger-leaved forms of *C. cro cea* with spatulate-cuneate blades and obscurely crenate-serrate apices may resemble the *C. illudens* form of *C. lassa* from Selma, Alabama. *Crataegus crocea*, like many in this subseries, can form an attractive, delicate shrub which should be very suitable for xeriscaping.

5a. Crataegus vicana Beadle, Biltmore Bot. Stud. 1:104. 1902. Type: U.S.A. Florida. Lake Co.: Tavares, 17 Aug 1901, *C.D. Beadle 4010*[2] (lectotype, selected here: US). U.S.A. Florida. Lake Co.: Tavares, 21 Mar 1901, *C.D. Beadle 4010, fragment* (epytype, selected here, NY).

Comment.—the epitype well displays almost complete lack of lobing on the crenate-margined young leaves as well as inflorescence indumentum.

Crataegus laxa Beadle Biltmore Bot. Stud. 1:103. 1902. Type: U.S.A. Alabama. Russell Co.: Girard, 8 Apr 1901, *C.D. Beadle 4117, fragment* (lectotype, here selected, NY)

? = *Crataegus inopina* Beadle, Biltmore Bot. Stud. 1:107. 1902. Type: U.S.A. Florida. Marion Co.: near Ocala, 20 Aug 1901, *C.D. Beadle 4001*[2] (lectotype, selected here: US). *Comment.*—The lectotype of *C. inopina* is almost leafless and difficult to interpret but it seems to equate to *C. vicana*. U.S.A. Florida. Marion Co.: near Ocala, 21 Mar 1901, *C.D. Beadle 4001* (epytype, selected here, NY). *Comment.*—This is a clear case where additional material is needed but, even so, the epitype is only a fragment.

Crataegus vicana is somewhat intermediate between *C. crocea* and *C. quaesita* and consists of forms with long-petiolate leaf-blades 2.5–4 cm long (i.e., generally much longer than in *C. crocea*) and length-width ratios of 1.7–1.9:1 that are strongly crenate, especially young, but barely lobed with 0–1 very small subterminal lobes per side. It somewhat resembles in general shape the broader-leaved *C. crocea* types with blunt or cuspidate

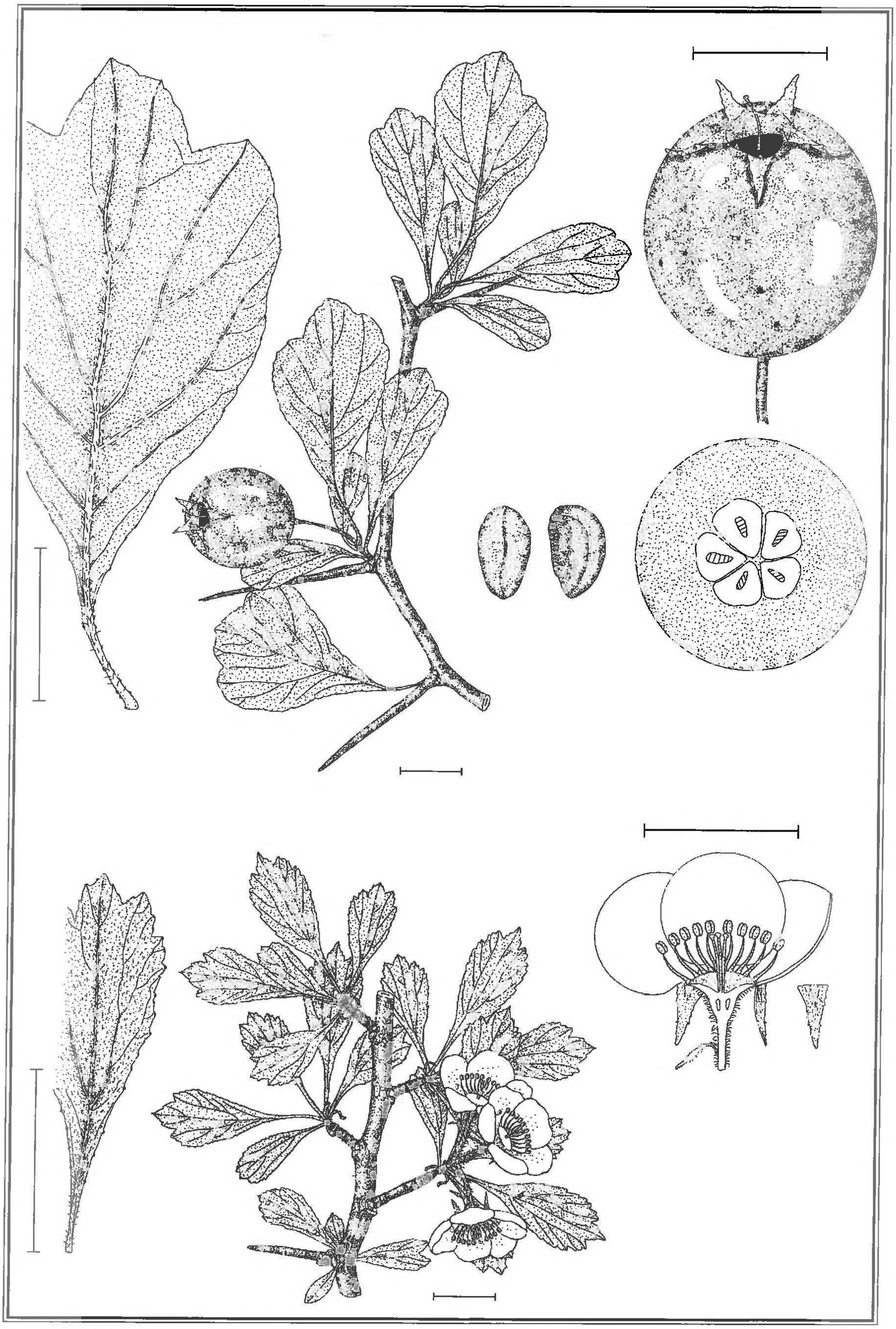

Fig. 11. Line drawings of: *Crataegus quaesita* from *J.B. Phipps 6492* (UWO), flowering; and of *C. floridana* from *J.B. Phipps 6791*, flowering and *R. Lance s.n.* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

narrow-obovate leaf-blades. The flowers are ca. 15 mm diam. and the fruit is smallish and pyriform-ellipsoid 6–8 mm diam, yellow or yellowish orange sometimes splotched with red (Beadle).

Distribution.—*Crataegus vicana* is a quite common entity of north-central Florida and Georgia with a single Alabama record.

It may be compared to *C. crocea* (*adusta* form) but usually has a more triangular to obtuse, rather that cuspidate, leaf apex that, in addition, is more irregular, at least at maturity. Also, there are similarities to the slender-leaved forms of the polymorphic *C. condigna*.

6. Crataegus quaesita Beadle, Biltmore Bot. Stud. 1:33. 1901. (**Fig. 11**). TYPE: U.S.A. FLORIDA. Gadsden Co.: River Junction, 3 Apr 1900, *C.D. Beadle 2080* (LECTOTYPE, selected here: US).

Crataegus viaria Beadle, Biltmore Bot. Stud. 1:101. 1902. TYPE: U.S.A. FLORIDA. Duval Co.: Jacksonville, 29 Mar 1901, *C.D. Beadle 4065* (LECTOTYPE, selected here: US).

Crataegus resima Beadle, Biltmore Bot. Stud. 1:100. 1902. TYPE: U.S.A. GEORGIA. Dougherty Co.: Albany, no date, *C.D. Beadle 4089²* (LECTOTYPE, selected here: NY 435966; ISOTYPES: NY, US). *Comment.*—The NY specimen selected is preferred for lectotype as it also has a flowering stem on the same sheet.

Shrubs or small trees 2–5 m tall; habit lacrimate; twigs of the season ± densely appressed white-pubescent, 1-year old gray-brown to purple-brown; older gray; thorns 1–2 cm long, usually present, straight, ± fine, purple-brown to gray. Leaves deciduous; petioles 2–6 mm long, densely pubescent, glandular at least initially; blades 1.5–3.0 cm long, narrowly broad-cuneate to obtrullate in general shape, generally tapered rather fast into a cuneate base, the tip acute to subacute; 1–2 small sharp lobes per side terminally, occasionally rather obscurely crenate-serrate at the tip; margins gland-dotted when young; venation craspedodromous with 1–4 narrowly diverging veins per side exiting beyond the widest part of the leaf; conspicuously pubescent along the veins below, slightly so above; often rather densely pubescent at first on the adaxial and slightly pubescent on the abaxial surface, later glabrescent, somewhat stiff or ± floppy at maturity. Inflorescences 1–3(–4)-flowered; branches densely appressed- white-pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 10–13 mm diam.; hypanthium externally white-pubescent; calyx-lobes ca. 4 mm long, narrow-triangular, gland-margined, abaxially thinly pubescent; petals elliptic or ± circular, white; stamens 20, anthers cream (?purple, see comment); styles usually 3–4. Fruit ca. 8–10 mm diam., subglobose, glabrescent to pubescent, mainly reddish-orange to red when-ripe; calyx remnants not always present, reflexed when so; nutlets 3–4(–5), dorsally grooved, laterally smooth.

Distribution (Fig. 12).—Northeastern Florida and Georgia, sandy soils.

Beadle's protologue for *C. quaesita* claims the anthers are purple, but if so, this would be nearly the only instance in ser. *Lacrimatae*, which series it fits in all other respects. The leaves of this species are somewhat like a very elongated *C. egens*, especially in its *viaria* form. *Crataegus resima* and *C. viaria* are good matches for *C. quaesita*, although the *viaria* form has less sharp lobes than the type form. *Crataegus meridiana* (subser. *Robustae*) is rather similar but more robust and with larger flowers.

6a. Crataegus sp. aff. **resima** Beadle, Biltmore Bot. Stud. 1:100. 1902. (**Fig. 14**).

This is a very local species with some similarities to *C. quaesita*. The mature, expanded leaves, 2–3 cm long, are however, much more sharply lobed and very sharp-tipped. Moreover, at anthesis these leaves are particularly small, only ca. 1 cm. long and thus very little expanded whereas in *C. quaesita* the leaves are nearly full size then. The flowers are 10–12 mm diam., the plant is very thorny, and the extension shoot leaves are 3 cm wide, ± isodiametric in general shape, with deep, narrow sinuses presenting a *marshallii*-like appearance.

Distribution.—Most specimens are from near Jacksonville, Florida but several are from Georgia.

7. Crataegus floridana Sarg., Bot. Gaz. 33:124. Feb 1902. (**Fig. 11**). TYPE: U.S.A. FLORIDA. Duval Co.: Jacksonville, 18 Jul no year, *A.H. Curtiss 8* (LECTOTYPE, selected here: A). *Comment.*—i) collection number was added to the lectotype label later in pencil; ii) another sheet from A, also labeled "TYPE" and containing presumptive lectotype material, is *A.H. Curtiss s.n.*, Mar 25 1900, same locality; this has five specimens, the central ones with much more sharply pointed tips, probably from another plant and perhaps repesenting a different taxon and its left-hand specimen would make an excellent epitype were one needed.

Crataegus anisophylla Beadle, Biltmore Bot. Stud. 1:99. Apr 1902. TYPE: U.S.A. FLORIDA. Duval Co.: Jacksonville, 30 Mar 1901, *C.D. Beadle 4067* (LECTOTYPE, selected here: NY; ISOTYPE: US).

Crataegus versuta Beadle, Biltmore Bot. Stud. 1:112. Apr 1902. TYPE: U.S.A. GEORGIA. Dougherty Co.: Albany, 25 Aug 1901, *C.D. Beadle 4091²* (LECTOTYPE, selected here: US). *Comment.*—This is a somewhat less markedly lobed form.

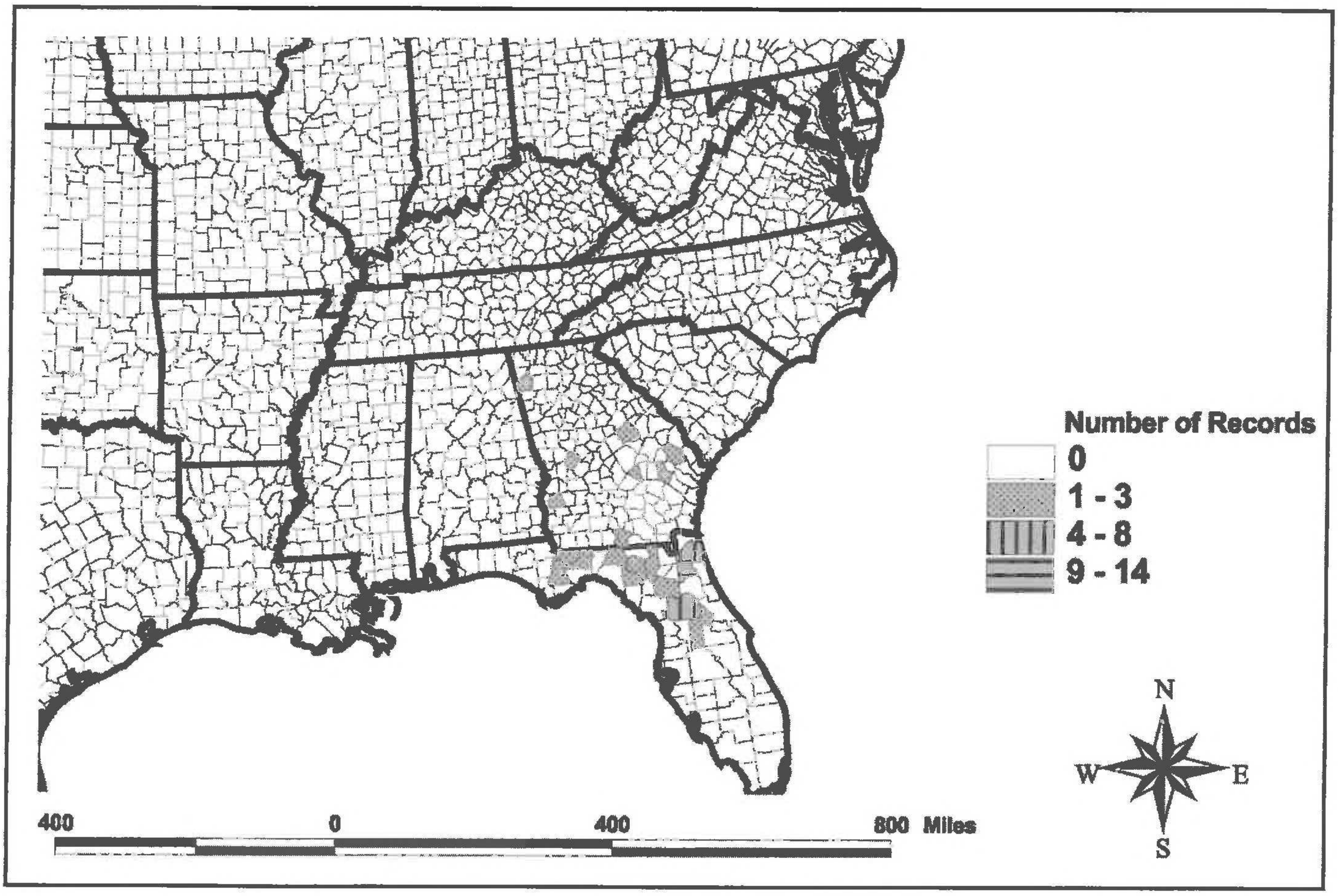

Fig. 12. County level distribution map of *Crataegus quaesita*.

Shrub to 6 m tall; bark of trunk dark brown or rimose; branches drooping; ultimate twigs zig-zag, dark purple-brown at 2 yrs; thorns fine, 2 cm long; dark purple-brown at 2 yrs. Leaves deciduous; petioles slender, 1–2 cm long, blades 1.5– 4.0 cm long, spatulate to obtrullate in general outline, somewhat obscurely to ± distinctly and subacutely lobed in the apical region; margins crenate to serrate in apical region, margins smooth proximally, strongly gland-dotted young; venation craspedodromous, main lateral veins 2–3/side; ± pubescent on both surfaces, persistent. Inflorescences 2–4-flowered; branches canescent-tomentose, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 12–15 mm wide; hypanthium tomentose; calyx-lobes narrowly triangular, abaxially tomentose; margins ± entire, petals 5, ± circular, white; stamens 20, anthers cream; styles 3–5. Fruit ellipsoid to subspherical, 6–8 mm diam., subglabrous or with some residual pubescence, orange; nutlets 3–5, dorsally grooved.

Distribution (Fig. 13).—*Crataegus floridana* is found in northern Florida, particularly around Jacksonville, and extends into Georgia with single records from Kershaw Co., South Carolina and Brunswick Co., North Carolina. It occurs on dry ground.

The delicate, long-petiolate leaves of *Crataegus floridana* may often be observed fluttering in the wind. Typical material of this species has long-petiolate leaves much longer than wide that are flared above the petiole and with shortish but somewhat acute lobes across the distal end. There is a gradation on the one hand to leaf forms with similar proportions but obscure or blunt lobes and on the other to forms with rather deep (LII 20–25%) and sharp lobes where the length:width ratio is as low as about 1.25. *Crataegus floridana* normally has the largest leaves of the *Tenues* group but has all the group characteristics of very short thorns, thin leaves, fine, very pendulous twigs, etc. The lectotype of *C. floridana*, with its trilobed leaves, is an exact match for the illustration of fruiting material of the latter species (Sargent, Silva, 1890, t.189). Sources of plentiful later confusion were that Sargent (1890) mistakenly placed *C. floridana* under *C. flava* (see explanation under *C. floridana* in vol. 13 of the same work (Sargent 1902)) and that the illustration

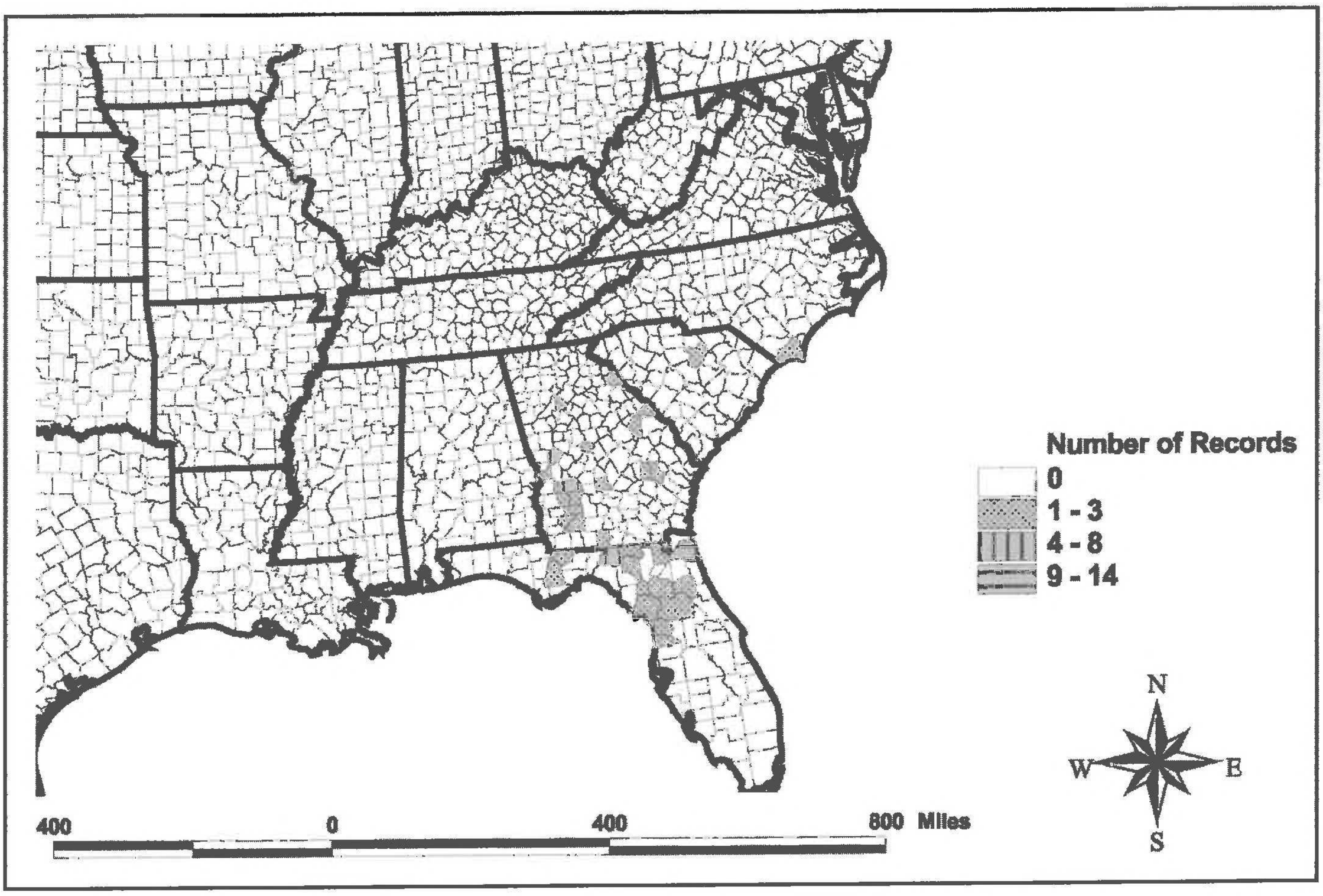

Fig. 13. County level distribution map of *Crataegus floridana*.

cited in Sargent (1890) clearly shows a different species, perhaps *C. crocea*. *Crataegus anisophylla* is a name that may be applied to the more markedly lobed forms. Much of the material of *C. floridana* was annotated *C. anisophylla* by me before the type of *C. floridana* was located. Also note comments under *C. meridiana*.

8. Crataegus invicta Beadle, Biltmore Bot. Stud. 1:37 1901. Type: U.S.A. Georgia. Wayne Co.: Doctortown, no date, fruiting specimen, no collector or number (lectotype, selected here: US 969331).

Small shrub 1–2.5 m tall, slender; branches flexuous at the nodes, extending shoots dense-canescent, rapidly becoming dark below the indumentum, purple-brown at 1-year old; usually very thorny, thorns 3–5 cm long, fine, straight, dark purple-brown at 1yr, becoming gray. Leaves deciduous; petioles 1–3 mm long, pubescent, gland-margined; blades 1.5–2 cm long, obovate-cuneate in general shape, shallowly lobed in the apical part, obscurely so in narrower or smaller leaves; margins obscurely crenate or crenato-serrate, teeth glandular; venation craspedodromous, veins 1–3 per side, exiting at or beyond at the widest part; surfaces in late spring to early summer moderately densely covered with a crisped pubescence; very glossy (probably dark green) adaxially at maturity. Inflorescences 1–2(–3)-flowered; branches very dense white-pubescent, bearing a few small, semi-persistent, linear, gland-margined bracteoles. Flowers 12–15 mm diam.; hypanthium externally ± densely pubescent; calyx-lobes narrow-triangular, abaxially thinly, margins glandular-serrate; petals ± circular, white; stamens 20, anther colour unknown; styles 3–5. Fruit 6–8 mm diam. by mid-June, ± pyriform, fully ripe fruit not recorded.

Distribution.—Dry sandy soils, southeastern Georgia and adjacent South Carolina, scarce and local.

Crataegus invicta is a distinctive species capable of flowering at under 1.5 m tall, as in the type collection. It is somewhat similar to the *cirrata* form of *C. egens* but differs in its relatively shorter petioles, typically much more thorny habit, and blunter and more shiny, apparently more coriaceous, foliage in the little material seen.

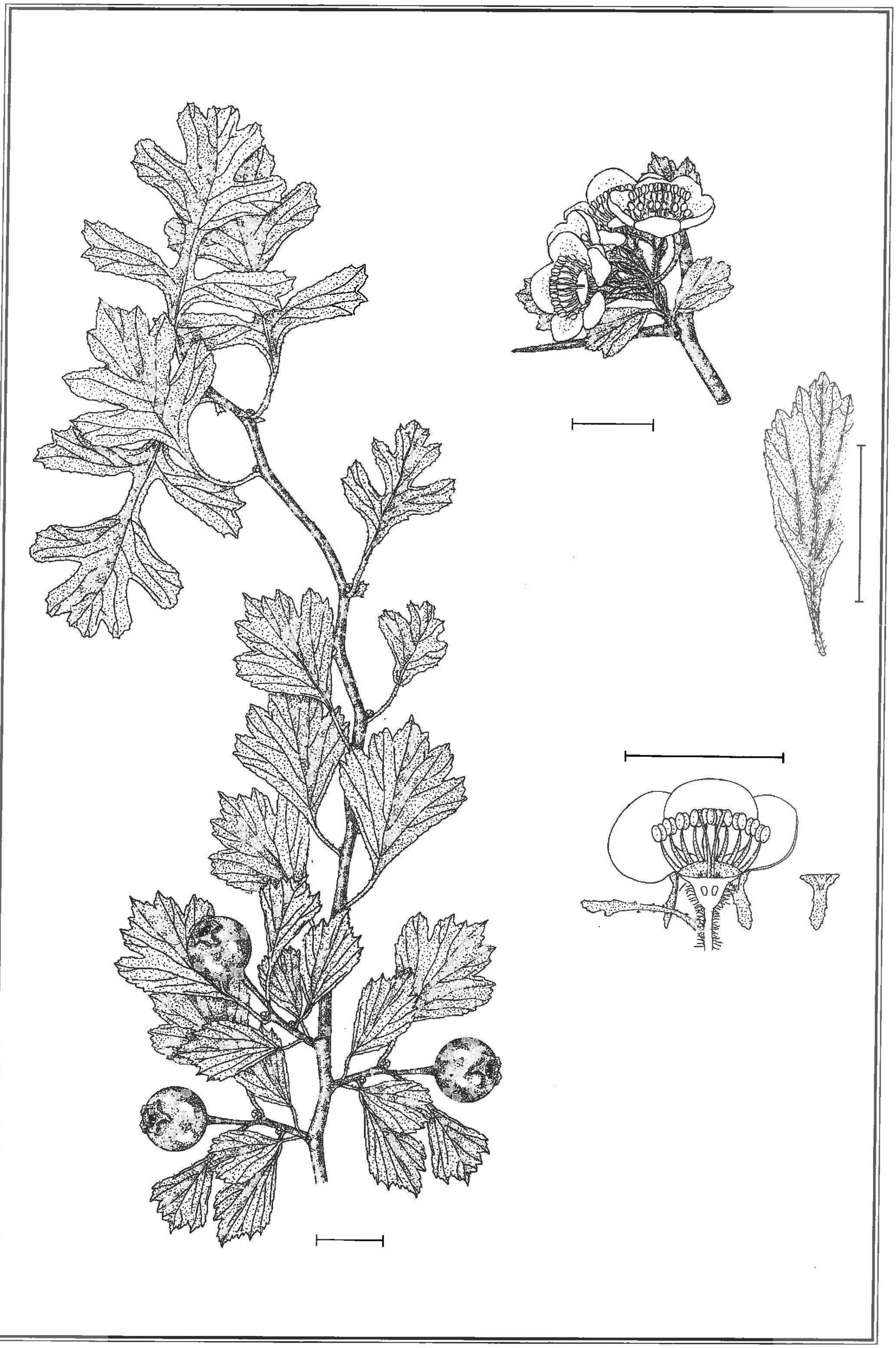

FIG. 14. Line drawing of *Crataegus* sp. aff. *C. resima* from *Curtiss 811* (NY), flowering and fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

8a. Crataegus sp.

This is a typical subser. *Tenues* shrub with strongly lacrimate branches, short, fine thorns and narrowly rhombobovate leaf-blades, i.e., with the lateral vertices nearer the distal end and entire margins; the long-cuneate bases taper into the pedicels which are 50–75% the length of the blades; flower diameter is 12–16 mm; styles 2–4; fruit pyriform, 7–12 mm diam., orange, usually flushed red.

This is a local form with a very distinctive leaf shape that does not appear to match any named entity, is probably not described and would key out next to *C. crocea*. It is known from northern Florida is very distinctive.

Subseries **Robustae** J.B. Phipps, subser. nov. (spp. 9–21). Type Species: *C. furtiva* Beadle.

Habitus vulgo aliquantum robustus et validus cum ramulis ultimis vulgo ± pendulis in plantis maturis; ramuli crassiores, saepe 2–3 mm lati ca. 5 cm ab apice; spinae, si adsunt, 2–5 cm longae, vulgo aliquantum valdae; laminae saepe 2.5–4 cm longae, et tremofactae in vento levissimo solum in *C. lanata* et *C. lassa*; fructus vulgo grandiores, 8–12 mm diam., saepe cuprini in maturitate.

Habit relatively robust and stocky though ultimate twigs usually ± pendulous in mature specimens; twigs thicker, often 2–3 mm wide at about 5 cm from the tip; thorns, if present, normally relatively stout, 2–5 cm long; blades commonly 2.5–4.0 cm long, often rather thick and stiff, fluttering in a light wind only in *C. lanata* and *C. lassa*; fruit usually larger, 8–12 mm diam., often copper-colored at maturity.

Members of this subseries also characteristically have thicker and often larger leaves than in subser. *Tenues* although this is not true of *C. condigna* and some forms of *C. integra*.

9. Crataegus condigna Beadle, Biltmore Bot. Stud. 1:35 1901. (**Fig. 15**). Type: U.S.A. Florida. Gadsden Co.: River Junction, 5 Sep 1899, *C.D. Beadle 1095* (lectotype, selected here: US).

Crataegus ravenelii Sargent, Bot. Gaz. 33:122. Feb 1902. Type: U.S.A. Georgia: Augusta, sand hills, 1901, *A. Cuthbert 411* (lectotype, here designated, A). *Comment.*—Ravenel's specimens from Aiken, SC, mentioned by Sargent and which might have included preferable lectotypes, have not been located. The lectotype, without precise date, is in full flower.

Crataegus arguta Beadle, Biltmore Bot. Stud. 1:102. Apr 1902. Type: U.S.A. Alabama. Russell Co.: Girard, 9 Apr 1901, *C.D. Beadle 4123* (lectotype, selected here: US).

? = *Crataegus audens* Beadle, Biltmore Bot. Stud. 1:114. Apr 1902. Type: U.S.A. Florida. Gadsden Co.: Chattahoochee, 30 Aug 1901, *T.G. Harbison 4963* (lectotype, selected here: US). U.S.A. Florida. Gadsden Co.: Chattahoochee, 8 Apr 1901, *T.G. Harbison 4097* (epytype, selected here, US).

Crataegus clara Beadle, Biltmore Bot. Stud. 1:95. Apr 1902. Type: U.S.A. Florida. Liberty Co.: Bristol, 4 Apr 1901, *T.G. Harbison 6033* (lectotype, selected here: NY).

Crataegus compitalis Beadle, Biltmore Bot. Stud. 1:93. Apr 1902. Type: U.S.A. Florida. Alachua Co.: Gainesville, 22 Aug 1901, *C.D. Beadle 4060*[2] (lectotype, selected here: US). *Comment.*—A flowering syntype at NY (*Beadle 4060*) appears to represent a different species, perhaps *C. illudens*.

Crataegus insidiosa Beadle, Biltmore Bot. Stud. 1:94. Apr 1902. Type: U.S.A. Alabama. Dale Co.: Ozark, 11 Apr 1901, *T.G. Harbison 4115* (lectotype, selected here: NY). *Comments.*—The lectotype is wrongly attributed to W.W. Eggleston and seems indistinguishable from *C. clara*.

?= *Crataegus rava* Beadle, Biltmore Bot. Stud. 1:91. Apr 1902. Type: U.S.A. Florida. Leon Co.: Tallahassee, no date, *T.G. Harbison 4064* (lectotype, selected here: US).

C. rimosa Beadle, Biltmore Bot. Stud. 1:107 Apr 1902. TYPE: U.S.A. Florida. Marion Co.: Citra, 21 Aug 1901, *C.D. Beadle 4043*[2] (lectotype, selected here: US 981163). U.S.A. Florida. Marion Co.: Citra, 27 Mar 1901, *C.D. Beadle 4043* (epytype, selected here: NY).

? = *Crataegus alachuaniformis* Murrill, Castanea 7:21. 1942. U.S.A. Florida. Alachua Co.: Sugarfoot, Aug 27 1940, *W.A. Murrill 34276* (lectotype: FLAS; isotype: US).

? = *C. praeformosa* Murrill, Castanea 7:25. 1942. U.S.A. Florida. Alachua Co.: 2 mi S of Warren's Cave, 10 Sep 1940, *W.A. Murrill 34618* (lectotype: FLAS; isotype: US).

Intricate shrub, 1–2.5 m tall or large shrub or small tree to 3–6 m tall (–10 m in the type); branchlets flexuous; extending twigs densely appressed-pubescent; 1-year old purple-brown; older dark gray; usually thorny, 2-year old thorns (2) 3–4 cm long, ± straight, rather fine, blackish gray. Leaves deciduous; petioles 5–8 mm long, ca. 20–35% length of blade, dense-pubescent, glandular; blades usually 1.5–3.0 cm long, obovate-spatulate in general outline; base tapered into petiole, apex often cuspidate, subacute to acute; unlobed or with the merest hint of lobes across the distal portion; margins evenly and distinctly dentate to

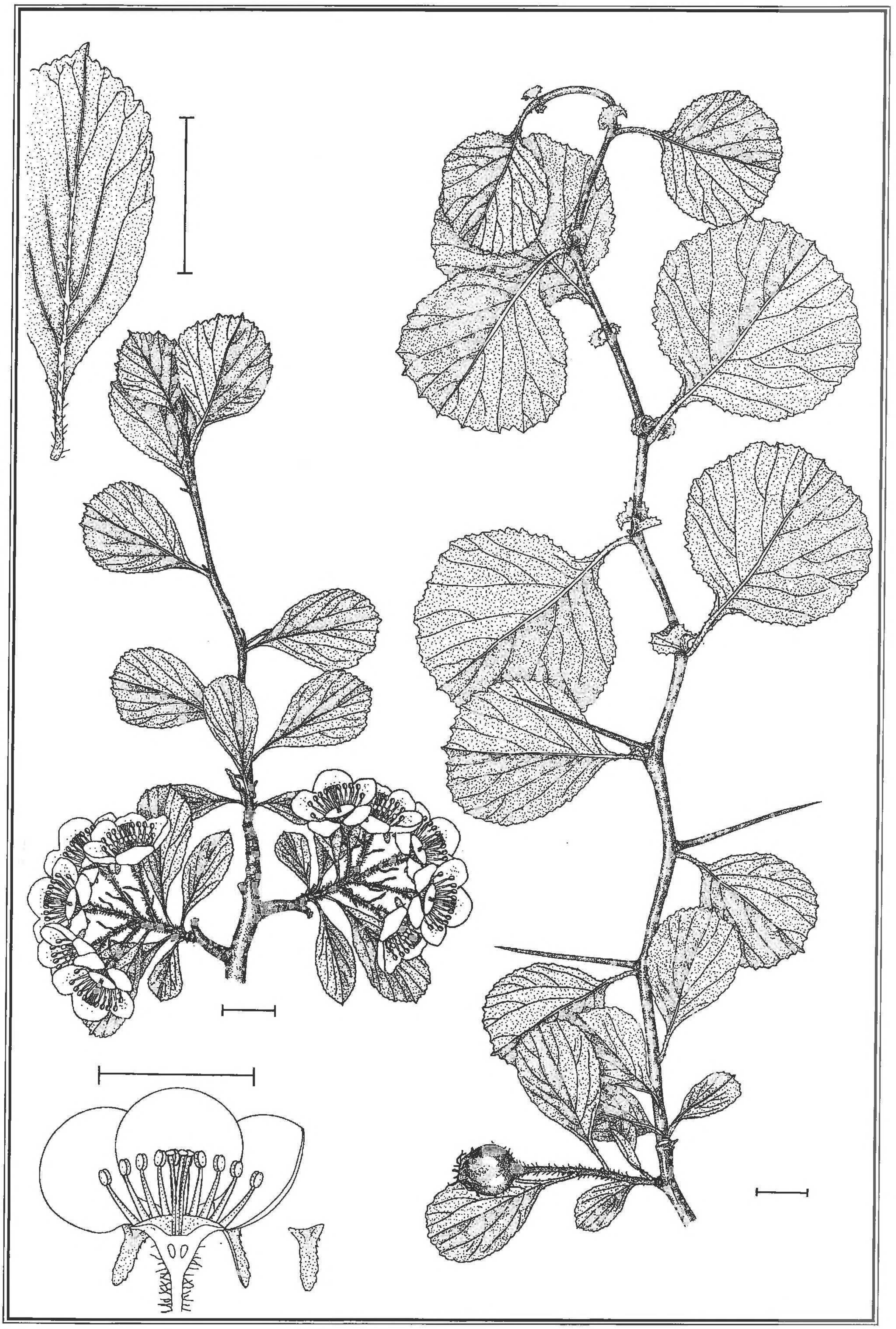

FIG. 15. Line drawing of *Crataegus condigna* from *J.B. Phipps 6578* (UWO), flowering and *R.K. Godfrey 80642* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

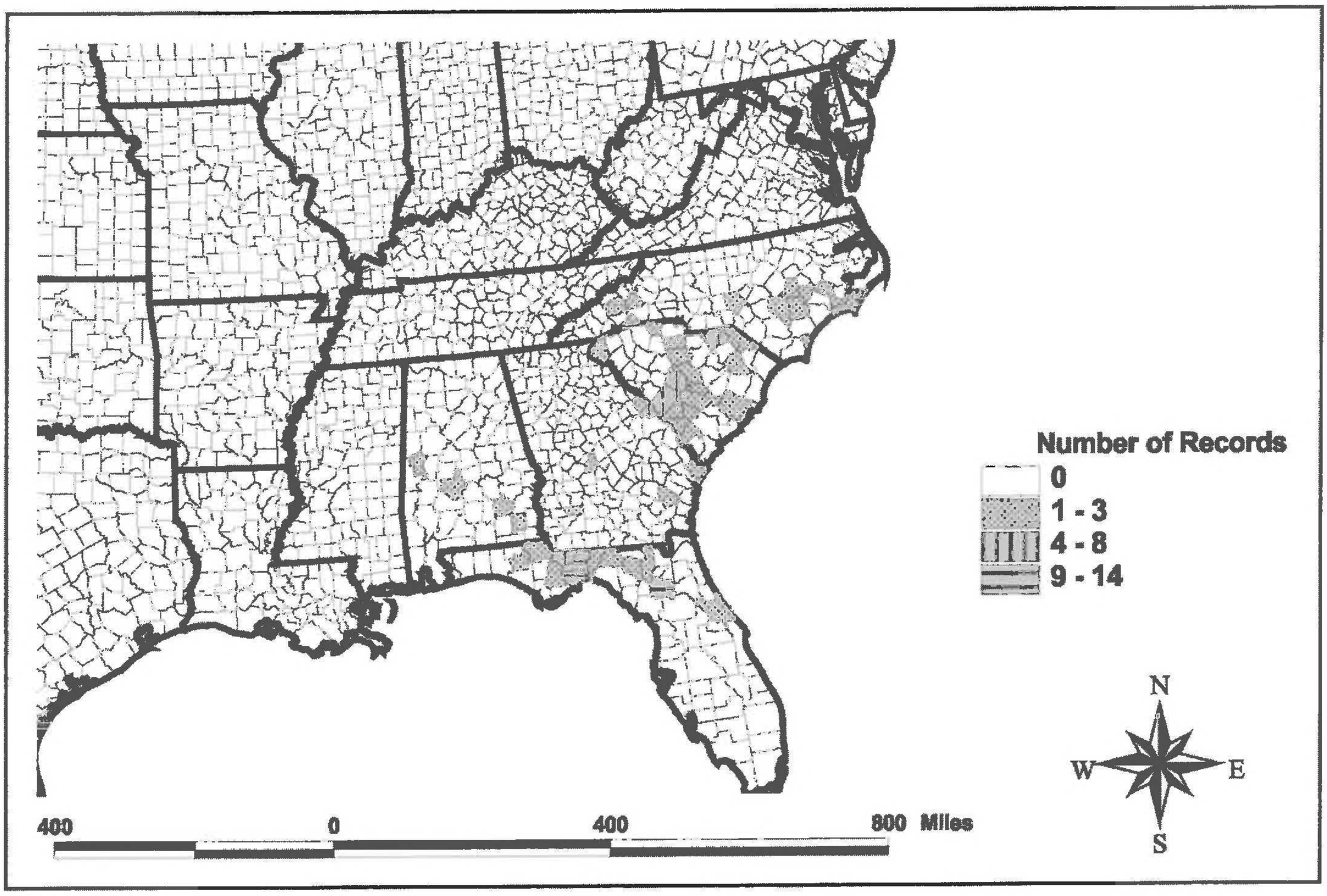

Fig. 16. County level distribution map of *Crataegus condigna*.

crenate-serrate, the teeth gland-tipped; venation craspedodromous, 3–4 veins per side exiting in the distal part of the leaf; at first pubescent above, below scabrous-hairy on the surface and tomentose on the main veins; bright light green young, coriaceous and somewhat shiny at maturity. Inflorescences 2–4-flowered; branches densely appressed-pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 13–16 mm diam.; hypanthium externally white-canescent, less densely above; calyx-lobes 3 mm long, narrow-triangular, margins gland-toothed, pubescent abaxially; petals ± circular, white; stamens 20, anthers cream; styles 3–5. Fruit 9–12 mm high, subglobose to sometimes ellipsoid, orange-red or orange at maturity, sometimes with flushed cheeks; calyx-lobes reflexed; nutlets 3–5, dorsally grooved, sides plane.

Distribution (Fig. 16).—*Crataegus condigna* has numerous records from south-central Alabama, North and South Carolina, as well as from Georgia and northern Florida. It is found in open areas and thin woodland, usually on sandy soil where it can be quite common.

This is an abundant and variable species, characterized by unlobed but distinctly toothed leaf margins. The extreme variation in stature suggests the existence of at least two forms but in the herbarium they cannot be distinguished. Forms with smaller leaves and more delicate branching, e.g., typical *C. condigna*, represent something of a link to subser. *Tenues*, and a few might just key out to to a broad-leaved form of *C. crocea*. On the other hand, forms of *C. condigna* well-developed leaves may resemble narrower versions of those of *C. florens* (but with smaller leaf marginal teeth) and, like the latter, *C.condigna* may also have circular extension-shoot leaves. However, the indumentum of both inflorescence and leaves is quite different from *C. florens*. The typical form is small-leaved, *C. compitalis* represents a particularly large-leaved form, while *C. clara* is a common and average form.

10. Crataegus alabamensis Beadle, Bot. Gaz. 30:342. 1900. (**Fig. 17**). Type: U.S.A. Alabama. Montgomery Co.: Montgomery, 16 Apr 1900, *C.D. Beadle 2168* (lectotype, selected here: A).

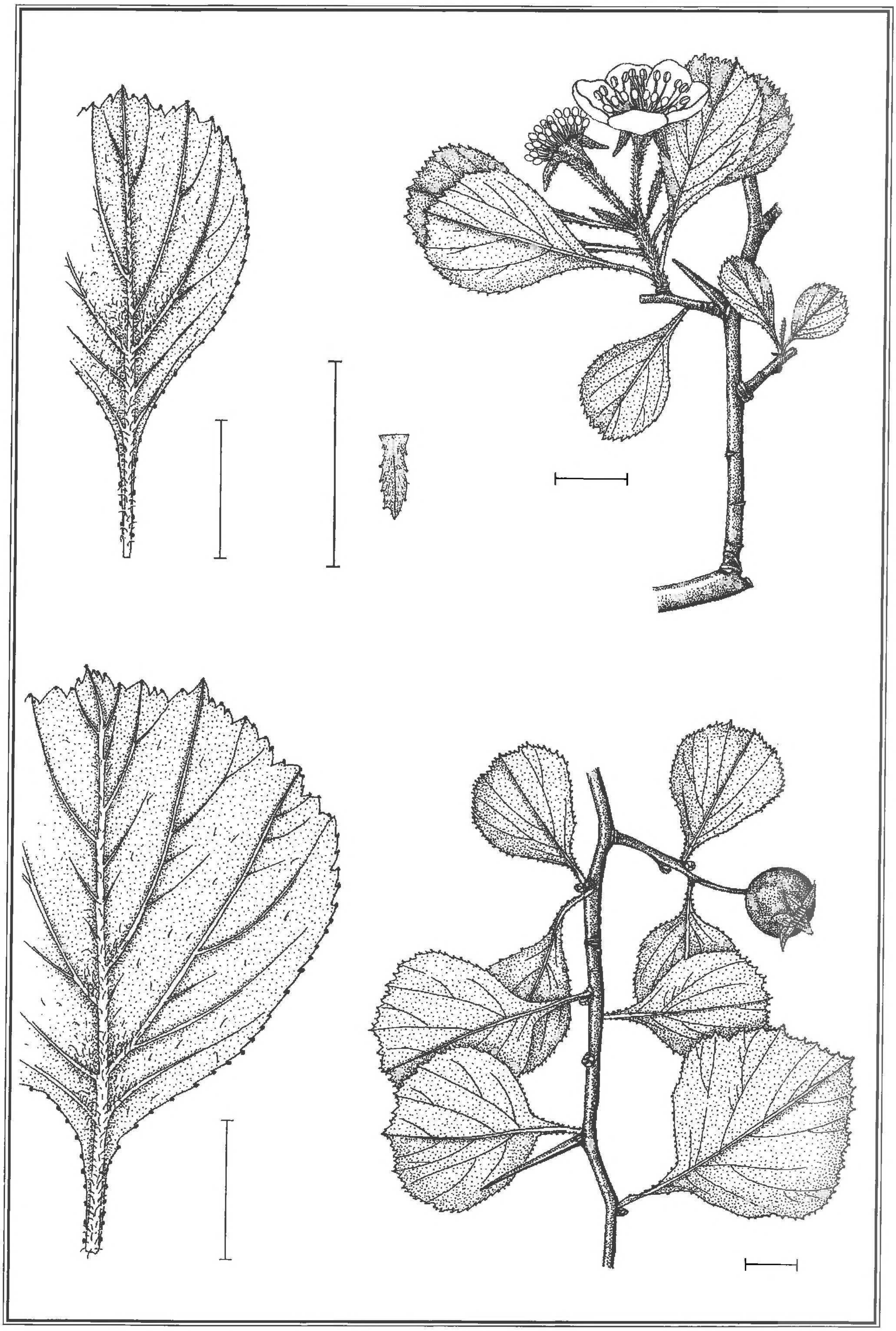

Fig. 17. Line drawing of *Crataegus alabamensis* from *L.C. Anderson 4133* (FLAS), flowering and *R. Kral 31417* (VDB), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

? = *Crataegus adunca* Beadle, Biltmore Bot. Stud. 1:87. 1902. TYPE: U.S.A. FLORIDA. Leon Co.: Tallahassee, 28 Aug 1901, *T.G. Harbison 4941* (LECTOTYPE, selected here: US).

? = *Crataegus dapsilis* Beadle, Biltmore Bot. Stud. 1:89. 1902. TYPE: U.S.A. FLORIDA. Lake Co.: Lane Park, near Tavares, 17 Aug 1901, *C.D. Beadle 4836* (LECTOTYPE, selected here: US).

Shrubs or small trees to 5 or 6 m tall; ultimate branches somewhat pendulous, extending twigs densely tomentose, 1-year old twigs dark gray, older gray; thorns 2–3 cm long, generally sparse or even lacking, slender, ± recurved, dark blackish grey at 1 year. Leaves deciduous; petioles slender, 20–30% length of blade or even shorter, pubescent, glandular; blades 2–3 cm long at anthesis, a little larger at maturity, broad oblong-cuneate in general shape with tip flattened to slightly cuspidate; sides lacking lobes, tapered regularly; margins regularly and finely crenato-serrate, this sometimes nearly or completely disappearing towards the base; venation craspedodromous with 3–5 lateral veins per side; when young surfaces subglabrous above, pubescent only on the veins below, shiny above at maturity. Inflorescences 3–6-flowered; branches tomentose, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 20–25 mm diam.; hypanthium externally tomentose; calyx-lobes narrowly triangular, abaxially appressed white-pubescent in the centre of their laminas, edges subglabrous, margins with gland-tipped teeth; petals ± circular, white; stamens 20, anthers yellow; styles 3–5. Fruit 10–15 mm diam., subglobose to pyriform, glabrate, red at maturity, often very glaucous on drying; calyx-lobes spreading; nutlets 3–5, dorsally grooved, sides plane.

Distribution.—Generally scarce, *C. alabamensis* occurs in south central Alabama and northern Florida near Tallahassee. It is found in open woods. The type location is recorded as being on on clay soil near Montgomery, Alabama, a somewhat unusual habitat for this series.

Crataegus alabamensis may be recognized by its beautifully formed leaves with conspicuously, if finely, crenato-serrate margins and, in the type, unusually broad leaves for this general shape (none narrower than 1.6:1). It may be confused with larger forms of the variable *C.condigna*, but see the key. *Crataegus adunca* has, unusually for this series, violet anthers. *Crataegus dapsilis* is a small-leaved form rather like broad-leaved forms of *C. crocea*.

11. Crataegus integra (Nash) Beadle, Biltmore Bot. Stud. 1:87. 1902. (**Fig. 18**). *Crataegus flava* Aiton var. *integra* Nash, Bull. Torrey Bot. Club 22:150 1895. TYPE: U.S.A. FLORIDA. Lake Co.: vicinity of Eustis, 1–15 Jul 1894, *G.V. Nash 1142* (LECTOTYPE, selected here: A; ISOTYPE: US).

? = *Crataegus constans* Beadle, Biltmore Bot. Stud. 1:88. 1902. TYPE: U.S.A. MISSISSIPPI. Lowndes Co.: Columbus, 14 Sep 1901, *T.G. Harbison 5066* = *4187*[2] (LECTOTYPE, selected here: US). U.S.A. MISSISSIPPI. Lowndes Co.: Columbus, 25 Apr 1901, *T.G. Harbison 4187* (EPYTYPE, selected here, NY).

Crataegus dolosa Beadle, Biltmore Bot. Stud. 1:90. 1902. TYPE: U.S.A. ALABAMA. Henry Co.: Abbeville, 9 Sep 1901, *T.G. Harbison 5036* (LECTOTYPE, selected here: US).

Crataegus sodalis Beadle, 1:80. 1902. TYPE: U.S.A. ALABAMA. Russell Co.: Girard, 26 Aug 1901, *C.D. Beadle 4868* (LECTOTYPE, selected here: US).

Shrub or small tree 2–5 m tall; bark of trunk ashy gray, rough or scaly; ultimate branches ± pendulous; twigs at 1 yr old ± flexuous, purple-brown or blackish, older dark gray; extending twigs densely white-canescent; usually thornless, or rare thorns 2–3 cm long, these slightly recurved, blackish or purple-brown at 1 yr old. Leaves deciduous; petioles short, usually < 25% length of blade, densely pubescent; blades white-hairy at anthesis, particularly on the veins below; 1.5–4 cm long, obovate-cuneate to narrow-obovate in general shape, the tip generally ± acute, essentially entire else with somewhat obscure, wavy lobes; sides gradually tapered into the winged upper part of the petiole; margins glandular-denticulate to subentire; ± pubescent above and below when young, especially on the veins below, glabrescent; venation craspedodromous, 2–4(–5) lateral veins per side on all but small leaves; ± coriaceous. Inflorescences 2–4-flowered; branches tomentose, bearing deciduous, oblong-linear, membranous, gland-bordered bracteoles; flowering mid-March (Florida) to mid-April. Flowers 15–20 mm wide; hypanthium externally tomentose; calyx-lobes 4 mm long, narrow-triangular, abaxially ± tomentose, margins finely toothed, teeth glandular; petals ± circular, white; stamens 20, anthers cream or ivory; styles 3–5. Fruit typically (8–)10–12 mm diam., subglobose, yellow blushed red to orange-red, pubescent; calyx-lobes spreading; nutlets 3–5, dorsally grooved, sides plane.

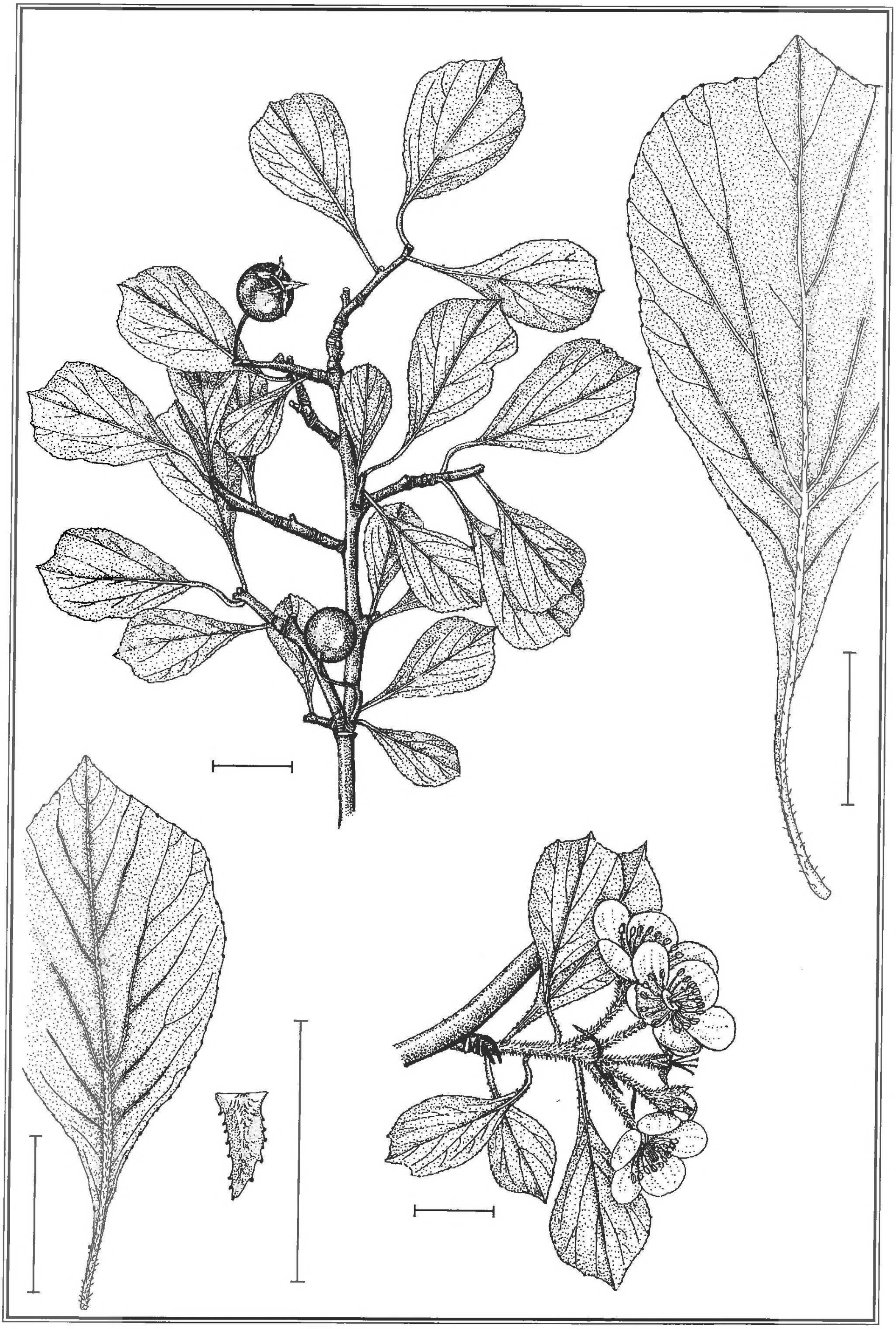

FIG. 18. Line drawing of *Crataegus integra* from *J.B. Phipps* 6650 (UWO), flowering and *R. Lance 2195* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

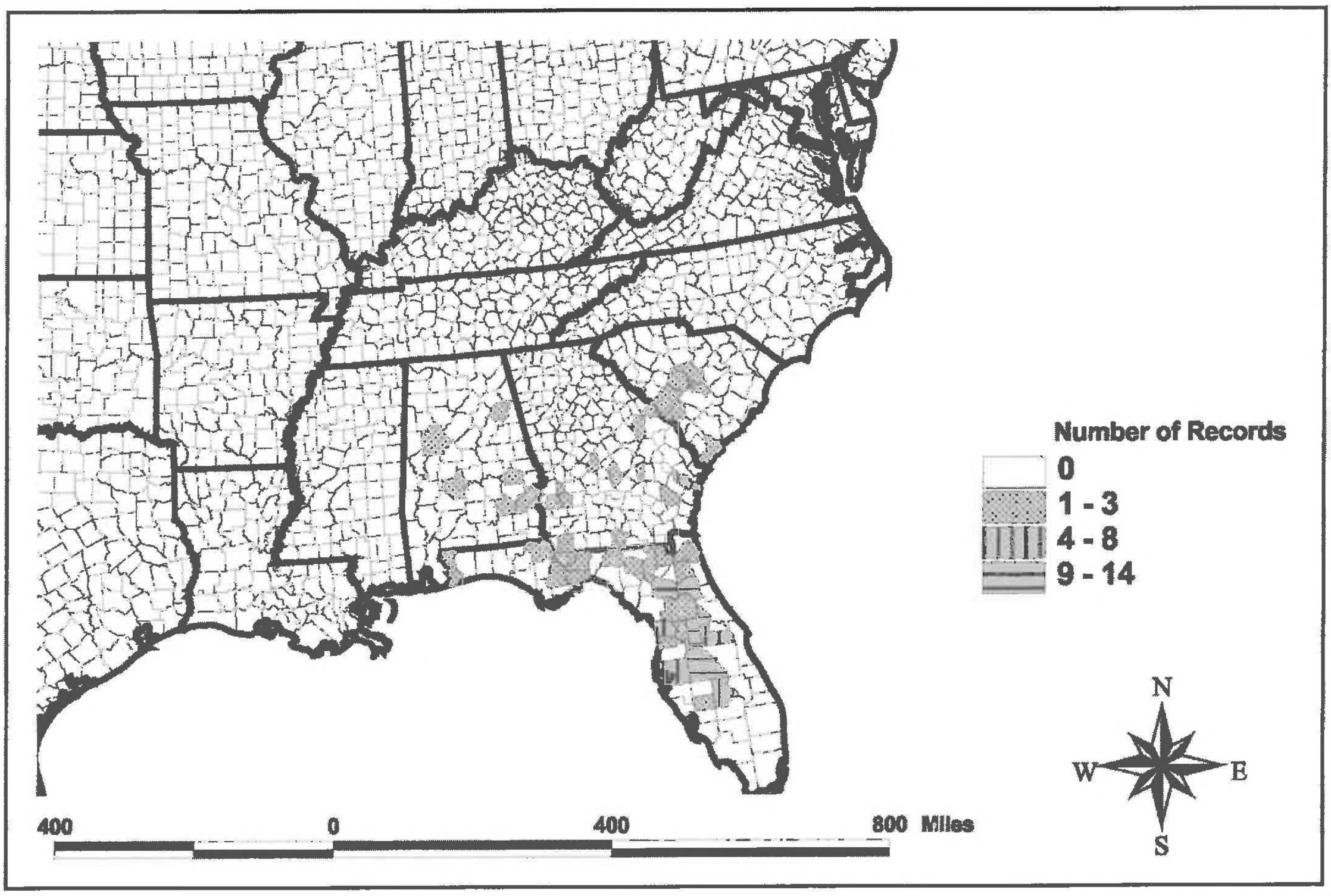

Fig. 19. County level distribution map of *Crataegus integra*.

Distribution (Fig. 19).—Occurring in the southeastern United States, concentrated in the northern half of peninsular Florida and extending to Alabama, southern Georgia and South Carolina, *Crataegus integra* is one of the more common members of series *Lacrimatae* in its main area of distribution. It may be found in sand plains, dry scrubby places, thin woodland, etc.

Crataegus integra is a fairly variable species in leaf shape and is notable for its almost perfectly entire leaf-blades, the margins of which often have numerous, barely detectible leaf-teeth. In well-presented specimens this species frequently displays a considerable variety of leaf size even on one short shoot. It has more veiny leaves than most species of ser. *Lacrimatae* and for this reason might key out to ser. *Apricae*. However, all other characteristics place it squarely with ser. *Lacrimatae*. One of the most different entities in the *C. integra* complex is *C. sodalis* (= *C. dolosa*). This entity has clearly denticulate margins and rather large suborbiculate extension shoot leaves. *Crataegus integra* differs from the *illudens* form of *C. lassa* in its generally rather smaller leaves and lacks the distinctive cuneate-cuspidate shape of the latter species which are also sometimes obscurely subterminally lobed. *Crataegus integra* is particularly common in the northern half of peninsular Florida where *C. lassa* is rare. *Crataegus constans*, with less copious inflorescence tomentum, longer petioles, and proportionately larger and thinner leaves is perhaps a shade form of *C. integra*.

12. Crataegus colonica Beadle, Biltmore Bot. Stud. 1:104. 1902. (**Fig. 20**). Type: U.S.A. South Carolina. Beaufort Co.: Bluffton, Jun 1882, *J.H. Mellichamp s.n.* (neotype, selected here, A).

Comment.—Beadle says in the protologue that Mellichamp first collected this species at Bluffton in 1882. There are three potential types at A: a flowering specimen ("rec'd May 7 1901"), a fruiting specimen ("rec'd 18 Jul 1899") and a sterile specimen (above), all by Mellichamp from the type locality but in different years. The neotype has attached to it an Arnold Arboretum packet of fruit labeled "SL 897. *C. colonica* Beadle. Type trees. B6007" which implies, but does not prove, that this Mellichamp 1882 specimen is a lectotype. The packaged seed with the neotype is fully mature, incompatible with a received Jun specimen, so it constitutes a separate specimen. I decided that it would be best, therefore, to select as neotype the 1882 Mellichamp specimen from the type locality even

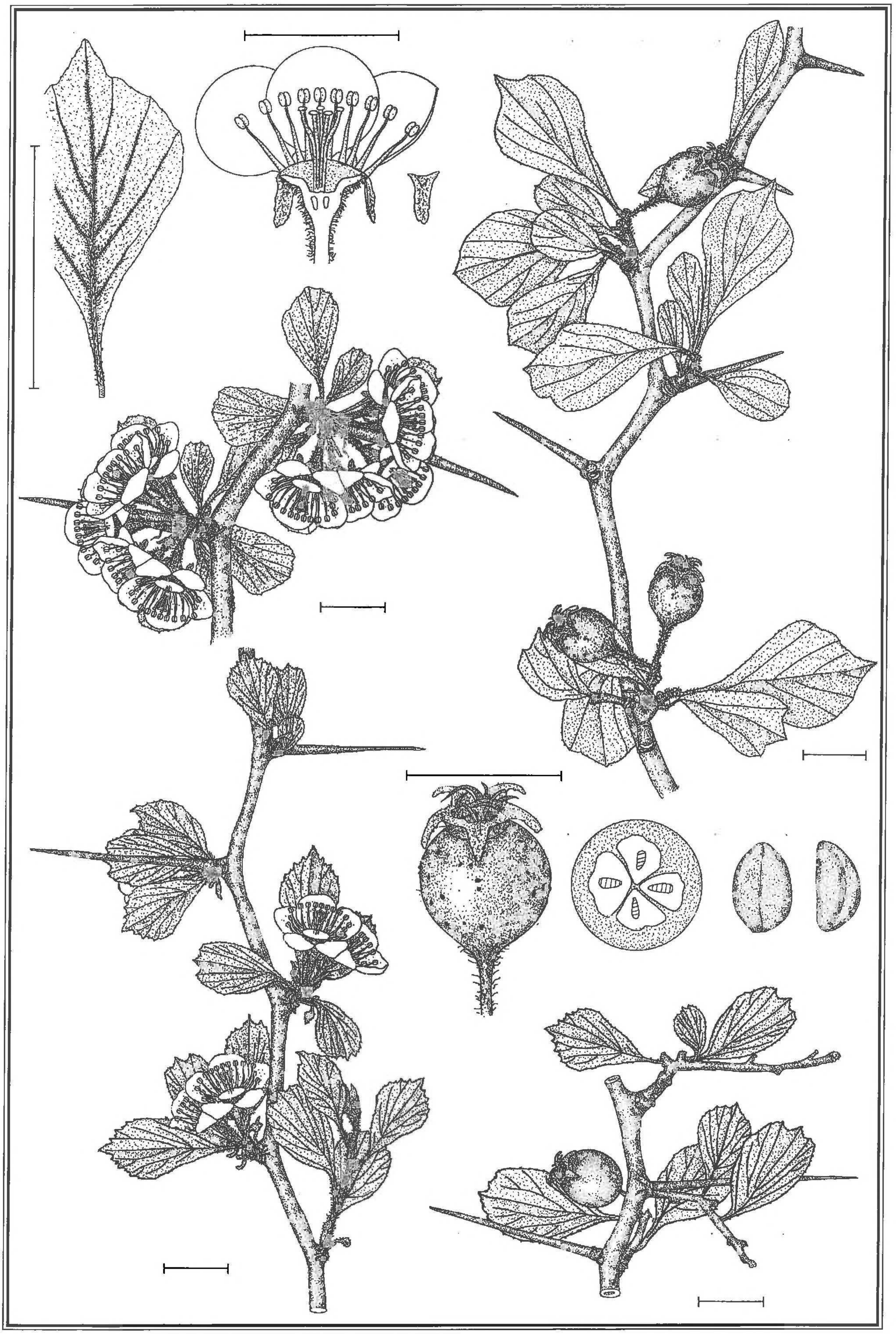

Fig. 20. Line drawings of: *C. colonica* (at top) from *J.B. Phipps 6511* (UWO), flowering and *J.B. Phipps 6671 & 6765* (UWO), fruiting; and *C. pexa* (at bottom) from *J.B. Phipps 6502 & 6576* (UWO), flowering and *Biltmore Herb. s.n.* (US), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

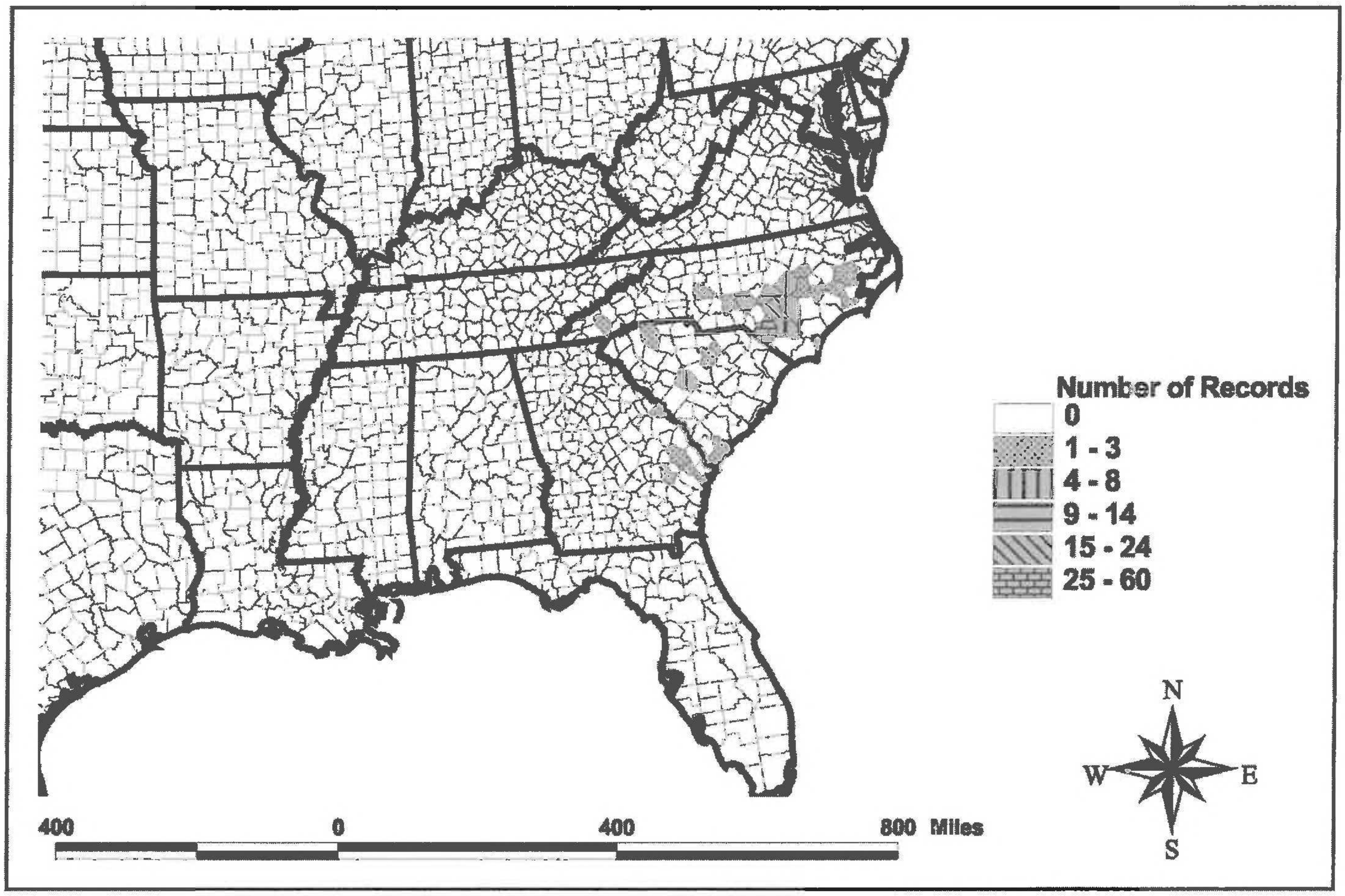

Fig. 21. County level distribution map of *C. colonica* and *C. pexa*.

though it is sterile and requires an epitype. U.S.A. South Carolina. Beaufort Co.: Bluffton, 'received' 18 Jul 1899, *J.H. Mellichamp s.n.* (epytype, selected here, A). *Comment.*—A complete specimen is chosen for an epitype.

Shrubs 1.5–3 m tall; bark of trunk ashy gray, rough or scaly; ultimate branches ± pendulous; twigs at 1 yr old ± flexuous, purple-brown or blackish, older dark gray; extending twigs densely white-canescent; usually very thorny, thorns 2–4.5 cm long, straight or slightly recurved, blackish or purple-brown at 1 yr old. Leaves deciduous; petioles short, ca. 15% length of blade, densely pubescent; blades white-hairy at anthesis, particularly on the veins below; 1.5–2.5(–3) cm long, obovate in general shape, sides gradually tapered into the winged upper part of the petiole; tip acute and ± cuspidate to ± obtuse, essentially entire to subentire, though distal margins somewhat denticulate; white-tomentose above and below when young, especially on the veins below, glabrescent adaxially; venation craspedodromous, 2–4(–5) lateral veins per side on all but small leaves; ± coriaceous. Inflorescences 2–4-flowered; branches tomentose, bearing deciduous, oblong-linear, membranous, gland-bordered bracteoles; flowering early to mid-April. Flowers 12–15 mm wide; hypanthium externally tomentose; calyx-lobes 4 mm long, narrow-triangular, abaxially ± tomentose, margins finely toothed, teeth glandular; petals ± circular, white; stamens 20, anthers cream or ivory; styles 3–5. Fruit typically 6–9 mm diam., pyriform or subglobose, green turning red or blushed red in mid-late August, pubescent; calyx-lobes spreading; nutlets 3–5, dorsally grooved, sides plane.

Distribution (Fig. 21).—This species occurs somewhat locally in the southeastern United States, especially the Carolinas, being particularly abundant in south-central North Carolina. It is found on sand hills, in dry sandy woodlands, sandy roadsides, etc.

Crataegus colonica is a rather distinct from most other species of this series on account of its thorniness combined with a rather distinctive leaf-shape reminiscent of forms of *C. crus-galli* together with its small, ±

pyriform fruit. However, whether the next entity, which has a similar distribution and thorniness, should be included, widening the phenetic width of *C. colonica*, is not yet clear.

13. Crataegus pexa Beadle, Biltmore Bot. Stud. 1:116. 1902. (**Fig. 20**). TYPE: U.S.A. NORTH CAROLINA. Rowan Co.: near Salisbury, 28 Apr 1897, Biltmore Herbarium 300b (LECTOTYPE, selected here: US 981163).

"Small shrub," on only specimen with indication of stature, differing from *C. colonica* as follows: branchlets very flexuous; extending twigs densely white-tomentose, 1-year old twigs dark gray; older gray; thorns generally numerous, at 2 years 3–5(–7) cm long, slightly to strongly recurved, purple-black at 1 year, older blackish, slender. Leaves deciduous; petioles 3–8 mm long, 10–20% length of blade, tomentose and somewhat glandular young; blades 1.5–3 cm long, obovate to obovate-rhombic in general outline, often narrowly so; apex acute to obtuse, not or obscurely lobed; margins strongly crenate-serrate for most of their length; venation craspedodromous, 2–3 veins per side; white-tomentose both sides young, indumentum thinner at maturity; somewhat coriaceous and dark at maturity. Inflorescences 1–3-flowered; branches tomentose, bearing deciduous, oblong-linear, membranous, gland-margined bracteoles. Flowers 12 mm diam.; hypanthium externally dense-tomentose; calyx-lobes ± linear, margins gland-toothed, tomentose abaxially; petals ± circular, white; stamens 20, anther colour not recorded; styles ca. 4. Fruit 8–10 mm diam., subglobose (a little taller than broad), ?orange at maturity, tomentose; calyx-lobes reflexed; nutlets ca. 4, dorsally grooved, sides plane.

Distribution (Fig. 21).—This entity is widely distributed in North Carolina and there are a few records from South Carolina and Georgia. It is found in dry woodlands, etc.

Crataegus pexa resembles *C. colonica* in its very thorny nature, most vegetative characteristics and general distribution. However, unlike the latter, its leaf margins are normally conspicuously crenate-serrate. Particularly thorny taxa are unusual in ser. *Lacrimatae* and as this species has such a similar distribution to the very thorny *C. colonica* more work on possible conspecificity is needed. Compared to *C. condigna*, plant stature is probably generally lower, the leaf blades are relatively broader, the thorns longer and always abundant and the twigs are particularly zig-zag. Also the leaf margination is different, see figures. Uncertain of the correct name at the time, *C. pexa* has been annotated as *C. "acantho-dentata."*

14. Crataegus teres Beadle, Biltmore Bot. Stud. 1:43. 1901. TYPE: U.S.A. ALABAMA. Montgomery Co.: Montgomery, 15 Apr 1900, *C.D. Beadle 2169* (LECTOTYPE, selected here: US; ISOTYPE: NY).

Comments.—There is a probable isotype at A with identical notes except lacking a collection number; the fruiting co-types at US and NY have blunter marginal teeth than the lectotype and uniformly blunt leaf-tips.

Shrubs or small trees, 3–6 m tall; with only slightly flexuous twigs; extending shoots subglabrous; 1-year old tawny to reddish-brown; 2-year old dark gray; 2 year old thorns 2–3 cm long, ± fine to fairly stout, ± straight, shiny blackish-gray. Leaves deciduous; petioles 0.3–0.7 cm long, somewhat pilose young, very glandular; blades 2–3.5 cm long, narrowly obovate in general shape, apex overall flat-triangular to rounded or ± truncate, often minutely cuspidate; ± evenly tapered proximally; lobeless; margins finely dentate, the teeth gland-tipped; venation craspedodromous, (2–)3–4 veins per side; sparsely hairy on the veins adaxially, glabrous abaxially; thin, shiny and dark green above at maturity, when slightly coriaceous; extension shoot leaves broad-elliptic to suborbiculate, larger, often slightly lobed, strong-toothed. Inflorescences 2–6-flowered; branches subglabrous, bearing deciduous, linear, membranous, gland-bordered bracteoles. Flowers ca.16 mm diam.; hypanthium glabrous; calyx-lobes 4–5 mm long, narrow-triangular, with glandular-serrate margins; petals ± circular, white; stamens 20, anthers pale yellow; styles 2–3. Fruit 8–10 mm diam., ±e llipsoid, red; calyx-lobes 7 mm long, spreading, thinly hirsute adaxially, narrow-triangular, gland-margined; nutlets 2–3.

Distribution.—Pine woods and sandy fields, south-central Alabama, scarce.

Crataegus teres and the following two species, *C. florens* and *C. attrita*, appear to form a natural group and may be difficult to distinguish. Characters that unite them are the ± lobeless leaves with ± sharply denticulate margins that are subcoriaceous and bright to deep green at maturity, subglabrous vegetative

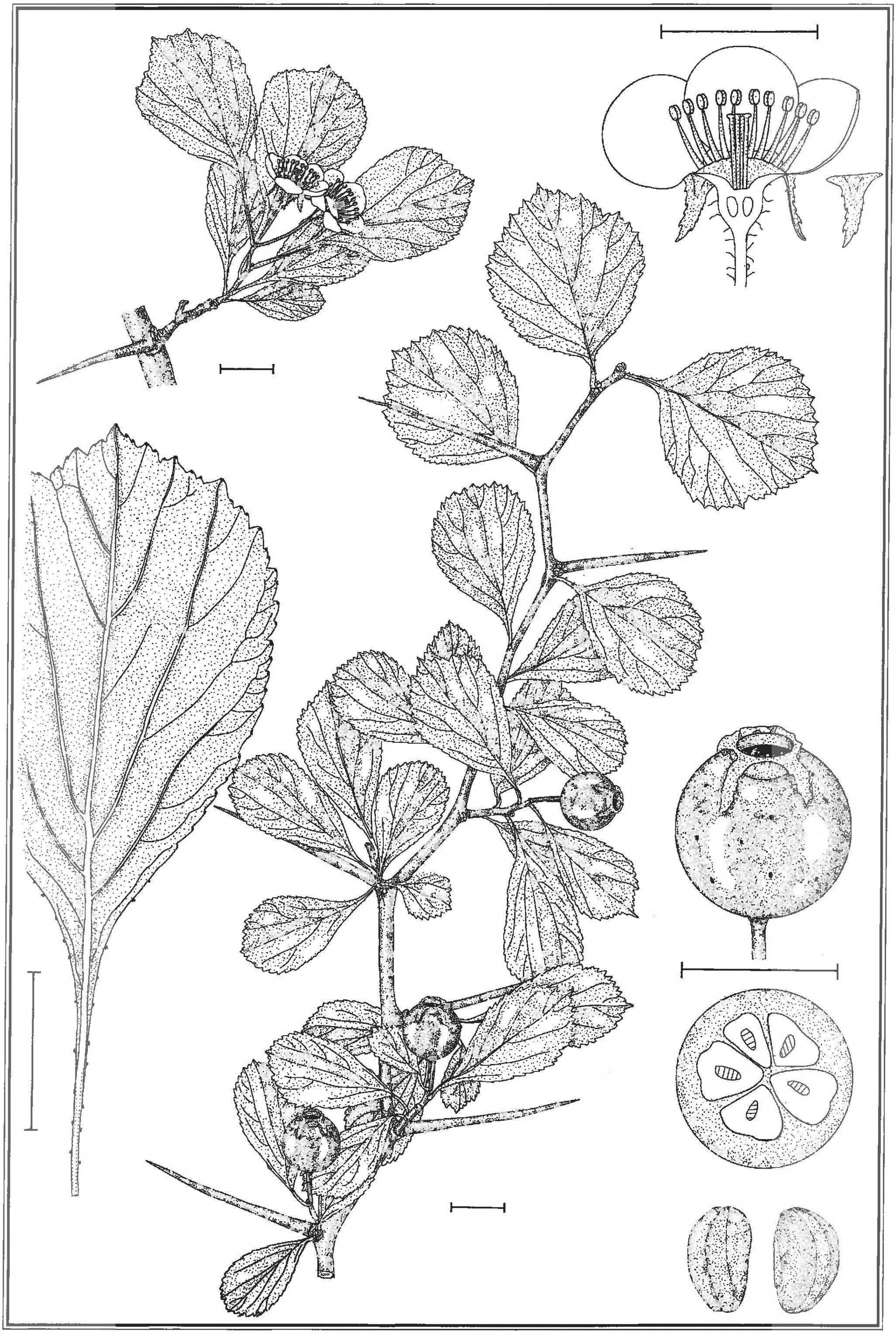

Fig. 22. Line drawing of *Crataegus florens* from *J.B. Phipps 7685* (UWO), flowering and *J.B. Phipps 6768* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

parts, and inflorescence branches that lack the dense tomentum characteristic of many members of series *Lacrimatae* and which instead, range from subglabrous to pilose. *Crataegus teres* has perhaps the most individual characteristics of the three, manifesting less of a zig-zag twig, having the smoothest leaf tips, more venous leaves (usually 3–4 per side), subglabrous to pilose inflorescences and only 2–3 styles and nutlets, an ensemble of characters not unlike what might be found in ser. *Crus-galli*. It is the least common of the three.

15. Crataegus florens Beadle, Biltmore Bot. Stud. 1:94. 1902. (**Fig. 22**). TYPE: U.S.A. MISSISSIPPI. Lowndes Co.: Columbus, Apr 25 1901, *T.G. Harbison 4176, fragment* (LECTOTYPE, selected here: NY).

Comments.—Though a fragment there is enough lectotype material supporting the protologue to assure identification. As with other NY types of Beadle names based on fragments the collection is attributed to W.W. Eggleston but WWE's notes are invariably identical to those of the original and presumably, true, collector.

Shrubs or small trees, 3–6 m tall; with flexuous branchlets; extending shoots thinly to more densely spreading-pubescent; 1-year old tawny to reddish-brown; 2-year old dark gray; 2 year old thorns 2–4.5 cm long, ± fine to fairly stout, straight to slightly decurved, shiny blackish- gray. Leaves deciduous; petioles 0.5–1.5 cm long, somewhat pilose young, glandular; blades 2–4.5 cm long, narrowly obovate to obovate in general shape, apex often ± cuspidate, else obtuse to subacute at the tip, fairly rapidly tapered into the petiole; usually without trace of lobes, sometimes with 1–2 obscure lobes in the distal part; margins ± dentate, the teeth large at least at anthesis, gland-tipped; venation craspedodromous, 2–4(1–2 in type) veins per side; sparsely hairy on the veins above and below, elsewhere glabrous; shiny and dark green above at maturity, thin, but slightly coriaceous; extension shoot leaves broad-elliptic to ± orbicular, large, often slightly lobed, strong-toothed. Inflorescences 3–6-flowered; branches thinly spreading-pubescent, bearing deciduous, linear, membranous, gland-bordered bracteoles. Flowers 15–18(20–25, Beadle) mm diam.; hypanthium externally pubescent; calyx-lobes 4–5 mm long, narrow-triangular, with glandular-serrate margins; petals ± circular, white; stamens 20, anthers pale yellow; styles 3(–5, Beadle). Fruit 8–15 mm diam., ± globose, orange-red to red; calyx-lobes 7 mm long, spreading, thinly hirsute adaxially, narrow-triangular, gland-margined; nutlets 3(–5, Beadle).

Distribution (Fig. 23).—*Crataegus florens* occurs mainly from central Mississippi to the Carolinas and Florida and is quite common in central Alabama. However, I have seen one unambiguous specimen from West Feliciana Parish, Louisiana (this is still east of the Mississippi, however). This species is found in brushy thickets on sand-plains, often in more mesic habitats than other members of ser. *Lacrimatae*.

Crataegus florens is differentiated from *C. teres* by the characters given in the key and also discussed under the latter species. Here we expand on the protologue and type specimen to include all forms of smaller flower dimensions and with larger, more strongly dentate leaves, thus including those with 3–4 veins per side but in other respects still quite different from *C. teres*. With this broadened circumscription, *C. florens* is a fairly common species. Differences from *C. attrita* are discussed under that species.

Crataegus florens is somewhat early flowering as interpreted here, before most other sympatric *Lacrimatae*, and much earlier than the type. The flowers are also much smaller than the protologue dimensions and as the veins are fewer than in the type it may finally prove that typical *florens* is very rare and therefore much of the material here attributed may eventually have to be transferred to a broadened *C. attrita*. But at the moment these matters must be left in abeyance. *Crataegus florens* as interpreted here is a striking plant with zig-zag twigs and fine glossy deep green leaves, superficially resembling members of ser. *Crus-galli*.

15a. Crataegus attrita Beadle, Biltmore Bot. Stud. 1:98. 1902. TYPE: U.S.A. ALABAMA. Dale Co.: Ozark, 11 Apr 1901, *T.G. Harbison 4116* (LECTOTYPE, selected here: US).

Shrubs or small trees 2–5 m tall; trunk bark rough or rimose; branches "recurved" (? = drooping); one year old twigs dull gray; extending twigs glabrous, dark greenish–red; thorns ca. 2 cm long, ± straight, dark grayish-black at one year. Leaves deciduous; petioles 30% length of blade, slender, very short pubescent in the sulcus, with a few sessile marginal glands; blades 2–3.5 cm long, cuneiform in general shape, tapered to

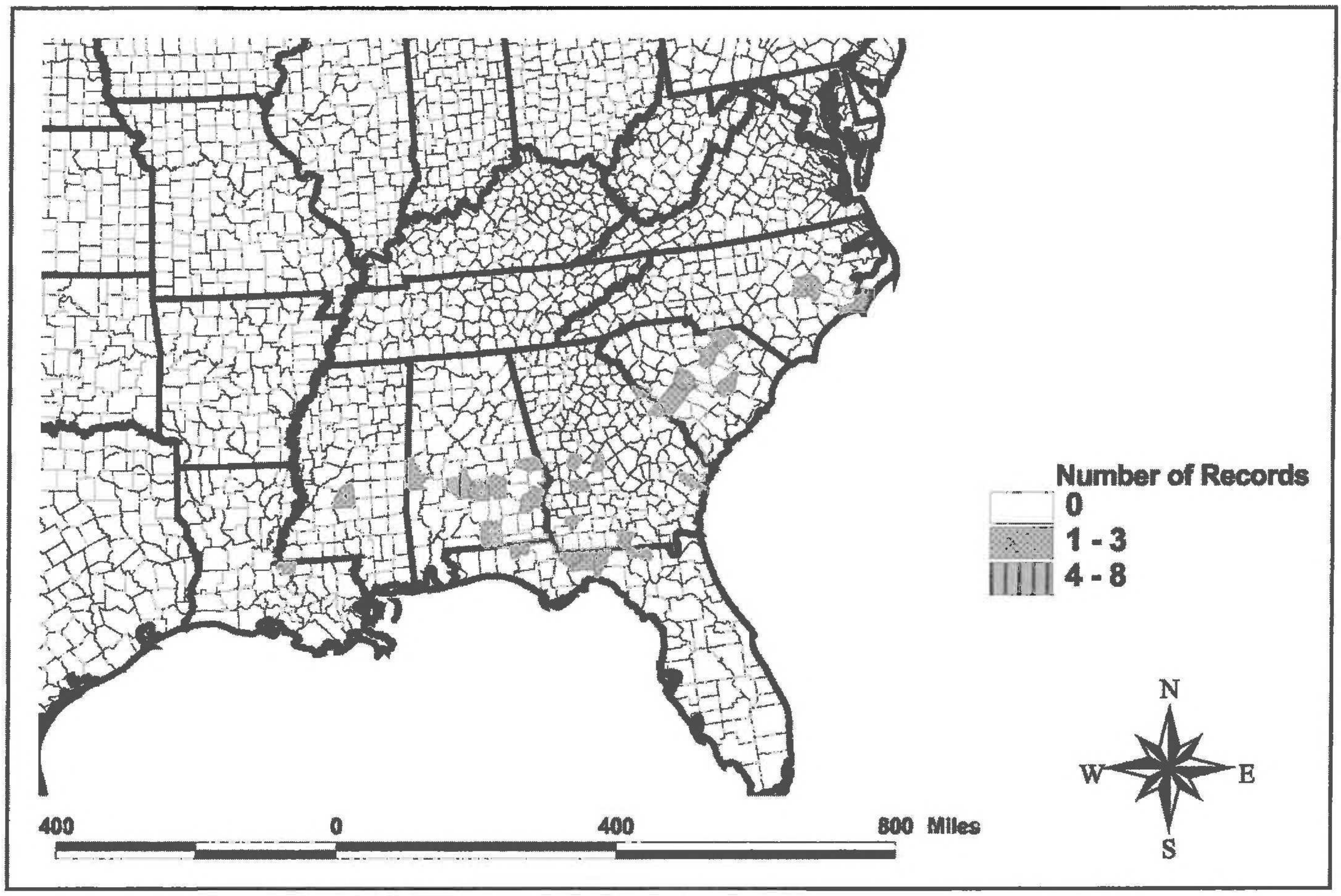

Fig. 23. County level distribution map of *Crataegus florens*.

the base, the apex rounded in general outline; margins dentate, the teeth gland-tipped, occasionally with a shallowly subterminal lobe on each side; venation semi-camptodromous with 1–3 lateral veins per side originating in the proximal part of the leaf and ending in the widest (distal) third of the blade; surfaces glabrous except for some tomentum along the proximal end of the midvein on both sides and tufts of hair in the main axils abaxially; thin. Inflorescences usually 2–3-flowered; branches glabrous or extremely sparsely pilose, bearing deciduous, membranous, linear, gland-margined bracteoles. Flowers 18–22 mm wide; hypanthium glabrous to very sparsely hairy; calyx-lobes 4–5 mm long, ± ligulate from a broad base, ± entire with some marginal glands, abaxially glabrous; stamens ca. 20, anthers cream; styles 3–5. Fruit 10–14 mm diam., subglobose, glabrous, at maturity yellow splashed red; calyx-lobes neither seen (JBP) nor recorded (Beadle); nutlets 3–5.

Distribution.—This is a rare species known only from southeastern Mississippi (Lowndes Co.), southeastern Alabama (Dale and Greene Cos.) and adjacent Florida (Washington Co.). Another specimen only differing in its densely pubescent inflorescence is known from South Carolina's 'Haw Ridge.'

Crataegus attrita is essentially similar to *C. florens* and *C. teres* and is generally intermediate between the two. Its dense tufts of hair in the abaxial vein axils are reminiscent of *C. aestivalis*.

15b. Crataegus pulla Beadle, Biltmore Bot. Stud. 1:96. 1901. Type: U.S.A. Mississippi. Lowndes Co.: Columbus, 25 Apr 1901, *T.G. Harbison 4181* (lectotype, selected here: NY).

Comment.—there is a good fruiting syntype at US.

Crataegus pulla is a little known species apart from excellent type material and the good protologue. It is a shrub 4–5 m high, with pendulous branches, ± obovate leaves which are at first ± tomentose, and then variably somewhat glabrescent, notable for its coarsely and rather irregularly toothed leaves often with a single, small, somewhat obscure lobe on each side. The flowers are borne on 2–5-flowered inflorescences

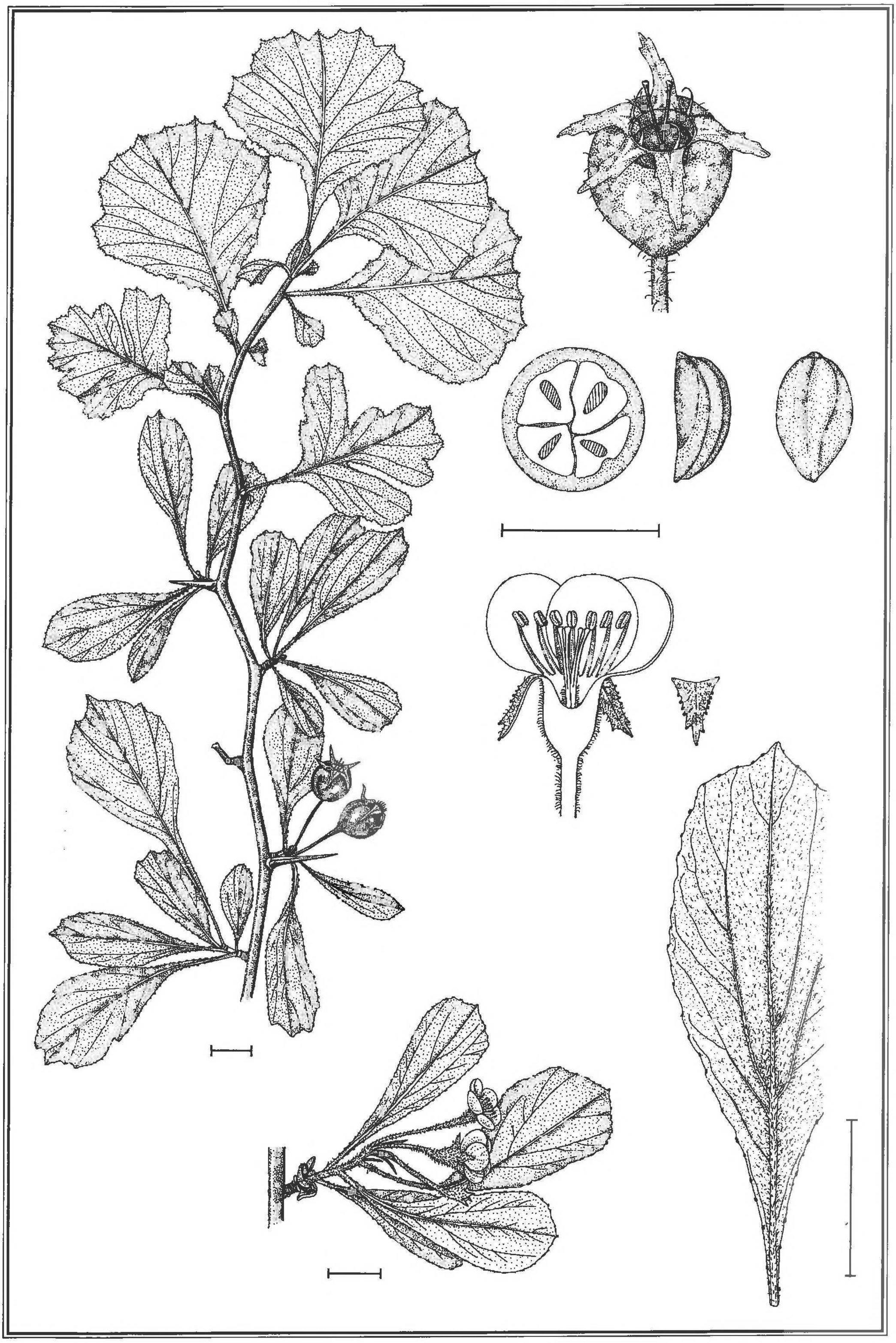

FIG. 24. Line drawing of *Crataegus lassa* from *J.B. Phipps 6481* (UWO), flowering and *J.B. Phipps 6702* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

and are 14–17 mm wide. The fruits are subglobose to ellipsoid, 9–12 mm wide, yellowish or orange–yellow flushed red.

Distribution.—*Crataegus pulla* was described from sandy flats along the Tombigbee River, Mississippi.

16. Crataegus lassa Beadle, Biltmore Bot. Stud. 1:29. 1901. (**Fig. 24**). TYPE: U.S.A. ALABAMA. Dale Co.: Selma, 5 Aug 1899, *C.D. Beadle 871* (LECTOTYPE, selected here: NY).

Crataegus illudens Beadle, Biltmore Bot. Stud. 1:111. 1902. TYPE: U.S.A. FLORIDA. Marion Co.: Citra, 28 Mar 1901, *C.D. Beadle 4055, fragment* (LECTOTYPE, selected here: NY).

Crataegus panda Beadle, Biltmore Bot. Stud. 1:89. 1902. TYPE: U.S.A. FLORIDA. Leon Co.: Tallahassee, Sep 1901, *T.G. Harbison 4051* (LECTOTYPE, selected here: A; ISOTYPE: NY).

Shrub or small tree 2–5 m tall; bark of trunk ashy gray, rough or scaly; ultimate branches ± pendulous; twigs at 1 yr old ± flexuous, purple-brown or blackish, older dark gray; extending twigs densely white-canescent; often thornless, or with rare thorns 3–4.5 cm long, straight or slightly recurved, blackish or purple-brown at 1 yr old. Leaves deciduous; petioles 0.5–1.5 cm long, usually 25–33% length of blade, densely pubescent, gland-margined; blades 2–4 cm long at maturity, obovate-cuneate to narrow obovate in general shape, the tip often strikingly cuspidate, essentially entire; sides gradually tapered into the winged upper part of the petiole; margins glandular, denticulate to subentire; into the winged upper part of the petiole; margins glandular, denticulate to subentire; venation craspedodromous, 2–4(–5) lateral veins per side on all but small leaves; ± white-pubescent above and below when young, especially on the veins below, glabrescent; ± coriaceous. Inflorescences 3–5-flowered; branches tomentose, bearing deciduous, linear, membranous, gland-bordered bracteoles; flowering early to mid-April. Flowers 15–20 mm wide; hypanthium externally tomentose; calyx-lobes 6–8 mm long, narrow-triangular, abaxially ± tomentose, especially at base and in centre, margins finely toothed, teeth glandular; petals ± circular, white; stamens 20, anthers cream or ivory; styles 3–5. Fruit typically (8–)10–12 mm diam., subglobose, yellow blushed red to orange-red, pubescent; calyx-lobes spreading-recurved or lost; nutlets 3–5, dorsally grooved, sides plane.

Distribution (Fig. 25).—*Crataegus lassa* occurs in the southeastern United States from central Alabama to South Carolina and northern Florida and is particularly abundant around its type locality of Selma. It inhabits sand plains, dry scrubby places, thin woodland etc.

Crataegus lassa is a handsome plant with its normally large foliage and big, floppy leaves. The type material has rather shorter leaves than most specimens seen commonly near to Selma today and is notable for having a few small terminal lobes. *Crataegus illudens* is barely different but has somewhat longer leaves and leaf tips more often quite entire. *Crataegus panda* is a form with a slightly shorter and relatively broader leaf, minutely crenate on the margins. There are also a few intermediates with *C. integra*.

17. Crataegus lanata Beadle, Biltmore Bot. Stud. 1:86. 1902. (**Fig. 26**). TYPE: U.S.A. GEORGIA. Gwennett Co.: near banks of Yellow R. below McGuire's Landing, 21 Jun 1899, *C.D. Beadle 587* (LECTOTYPE, selected here: US).

? = *Crataegus amica* Beadle, Biltmore Bot. Stud. 1:97. 1902. TYPE: U.S.A. FLORIDA. Marion Co.: Ocala, 20 Aug 1901, *C.D. Beadle 4004²* (LECTOTYPE, selected here: NY). U.S.A. FLORIDA. Marion Co.: Ocala, 21 Mar 1901, *C.D. Beadle 4004* (LECTOTYPE, selected here: US).

Crataegus ? inops Beadle, Biltmore Bot. Stud. 1:96. 1902. TYPE: U.S.A. ALABAMA. Dale Co.: Ozark, 1 Apr 1901, *T.G. Harbison 4113* (LECTOTYPE, selected here: US).

Shrubs to 4 or 6 m, broad-spreading when mature, branchlets often pendant; expanding twigs densely appressed white-pubescent; 1-year old brown to purple-brown, glabrous; thorns 1–4 cm long, ± straight, none to plentiful, slender, purple-brown. Leaves deciduous; petioles 3–6(–10) mm long, pubescent when young, strongly glandular; blades 3–5 cm long, narrowly to broadly obtrullate in general shape, or sometimes more obovate; tip acute to subacute, the base usually gradually tapered to the petiole; with 1–2(–3) short, but well-defined lobes per side across the terminal end; margins subentire to obscurely crenate-serrate, glandular; venation craspedromous with 2–3 strong lateral veins exiting above the broadest part of the leaf; pubescent above and below when young and at maturity. Inflorescences 1–4-flowered; branches densely white-canescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers about 17–20

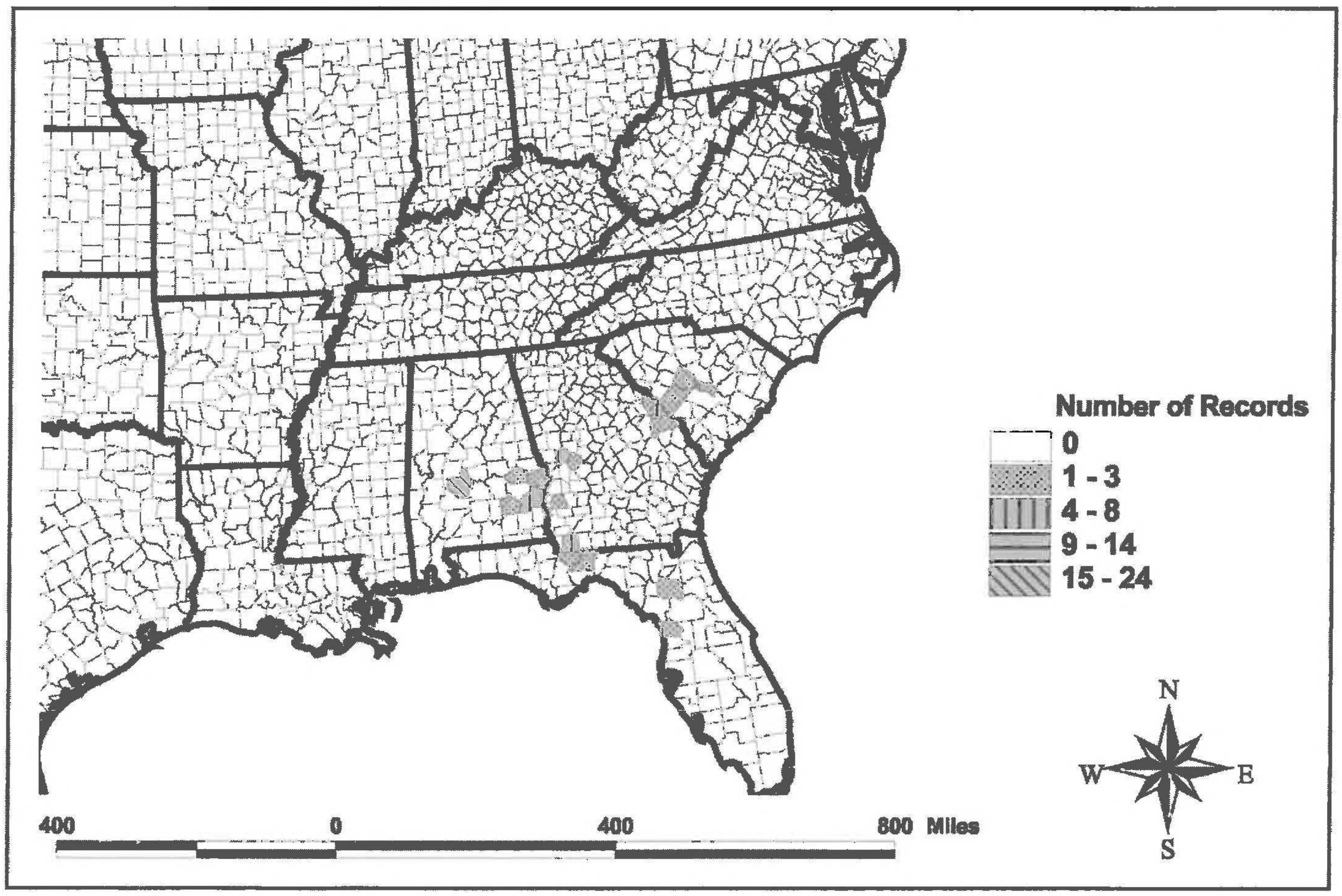

FIG. 25. County level distribution map of *Crataegus lassa*.

mm diam.; hypanthium externally densely canescent; calyx-lobes 5 mm long, narrow triangular, abaxially pubescent, margins gland-toothed; petals ± circular, white; stamens 20, anthers ivory; styles 4–5. Fruit up to 9 mm broad, subglobose to somewhat pyriform, generally orange or ruddy to crimson, somewhat pubescent; calyx-lobes reflexed; nutlets 4–5, dorsally sulcate, laterally smooth.

Distribution (Fig. 27).—This species occurs in the southeastern USA from Alabama to the Carolinas and northern Florida and is generally common. However, there is one record from Chesterfield Co., Virginia. It is found in pine barrens and open scrubby places, most commonly on sand.

Crataegus lanata is one of the most abundant taxa in series *Lacrimatae* and is noted for its very large (for this series), usually floppy, shallowly-lobed, kite-shaped leaves, somewhat white pubescent at all times. The leaves are typically clearly but shortly lobed (see illustration) and this is the common taxon that has been annotated *C. inops*. The fruit of *C. lanata* ripens to an attractive copper to red. Though the leaves are typically of quite a different shape from the *illudens* form of *C. lassa* (also illustrated), some intermediates with *C. lassa, sens. str.*, do exist. *Crataegus lanata* also intergrades with a long-leaved *lassa* type with a few very short subterminal lobes and these intermediates have mostly been annotated *C. ?inops*.Other variants with broader, more obovate leaves have been annotated as "cf. *inops*" and these may be the same as *C. amica*. These intermediates have as a rule been annotated to the taxon with which they were most similar

18. Crataegus furtiva Beadle, Biltmore Bot. Stud. 1:81. 1902. (**Fig. 28**). TYPE: U.S.A. GEORGIA. Dougherty Co.: Albany, 24 Aug 1901, *C.D. Beadle 4865* (LECTOTYPE, selected here: NY).

Shrubs, 3–4 m tall or small trees to 6 m; extending twigs densely appressed white-pubescent, 1-year old twigs purple-brown; older deep gray; usually unarmed but sometimes with thorns, about 2–3 cm long, straight, these same color as twigs of the same age. Leaves deciduous; petioles 3–6 mm long (unwinged part), widen-

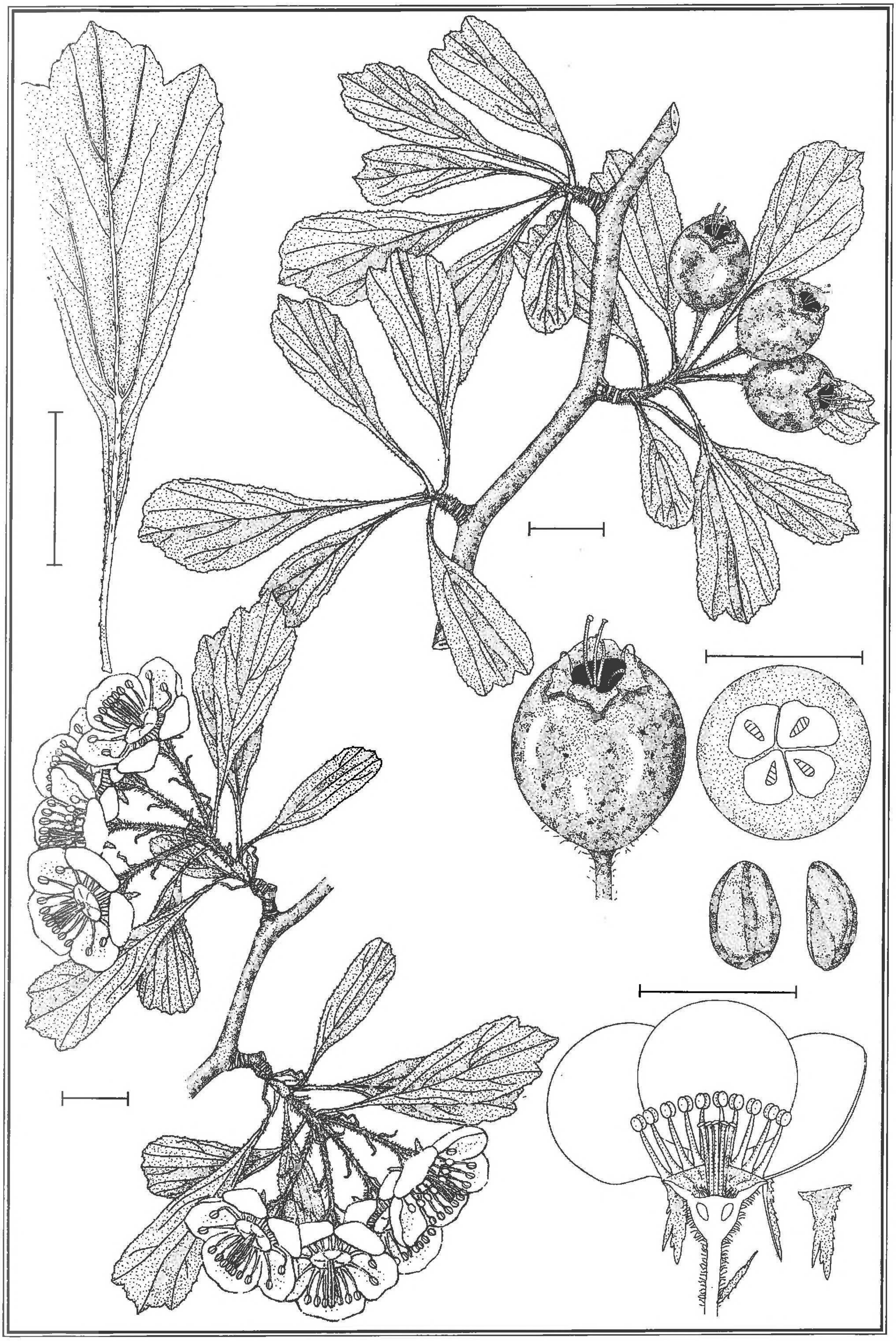

Fig. 26. Line drawing of *Crataegus lanata* from *J.B. Phipps 6482* and *7691* (both UWO), flowering and *J.B. Phipps 6722* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

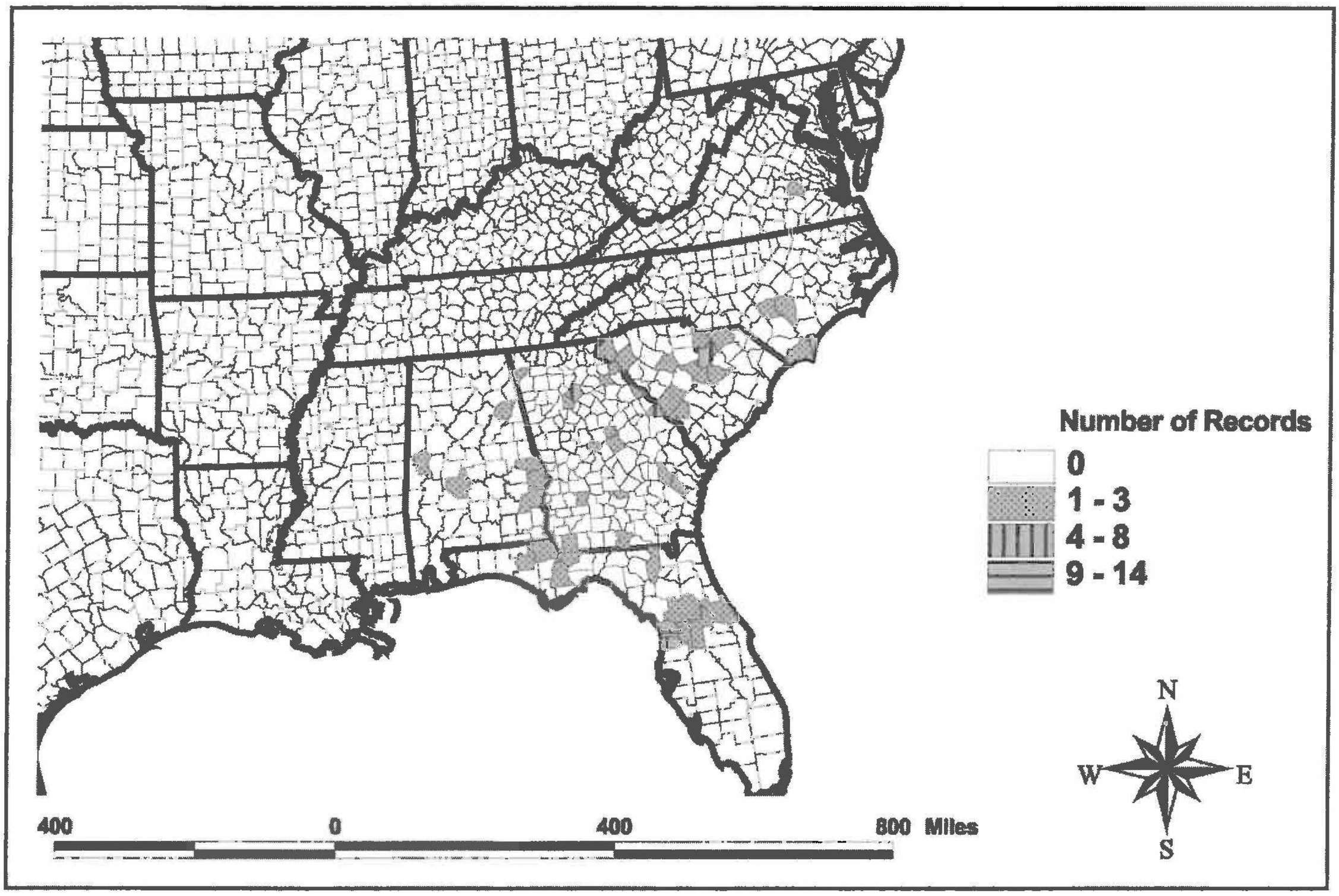

Fig. 27. County level distribution map of *Crataegus lanata*.

ing above into a broad wing, pubescent, glandular; blades 1.5–2.5 cm long, broadly obtrullate or obdeltate to obtrullate in general shape; base tapered very rapidly into the winged upper part of the petiole; often shallowly and bluntly 3-lobed across the top, occasionally only sharply cuspidate, alternatively with more acute tip in the narrower-leaved forms; margins finely and obscurely crenate, the teeth gland-tipped; venation craspedodromous with 2–3 lateral veins per side, these diverging at a narrow angle from the mid-vein; surfaces densely tomentose when young, variably glabrescent later. Inflorescences 2–4-flowered; branches densely tomentose-canescent, bearing deciduous, ± linear, membranous, gland-margined bracteoles; anthesis mid-April in central Georgia. Flowers 14–16 mm diam.; hypanthium externally densely white appressed-pubescent; calyx-lobes ca. 5 mm long, narrowly triangular, abaxially appressed white-pubescent, margins with gland-tipped teeth; petals ± circular, white; stamens 20, anthers cream; styles 3. Fruit 8–15 mm diam., broad-ellipsoid to ± orbicular, glabrous to thinly pilose, orange to red; calyx-lobes reflexed; nutlets ca. 3, dorsally grooved, laterally smooth.

Distribution (Fig. 29).—This species is concentrated in Georgia and South Carolina with a few additional records from North Carolina, Alabama and Florida. It is found in open brushy places, most usually on sandy soils, often among thin pine.

Crataegus furtiva, as it is usually seen, has among the smallest leaves of the thick-twigged group and is one of the most densely hairy of all series *Lacrimatae* when young. Its usually broad, obtrullate leaves (as illustrated) are quite distinctive. It represents what was at first held to be *C. lanata*. However, the narrower leaved form, which is also quite common, is the type form. In spite of some variability in leaf shape and fruit size, shape and residual indumentum, this species is generally easily recognized.

19. Crataegus meridiana Beadle, Biltmore Bot. Stud. 1:115. 1902. Type: U.S.A. Alabama. Dale Co.: Ozark, 11 Apr 1901, *T.G. Harbison 4114* (lectotype, selected here: US; isotype: fragment at NY).

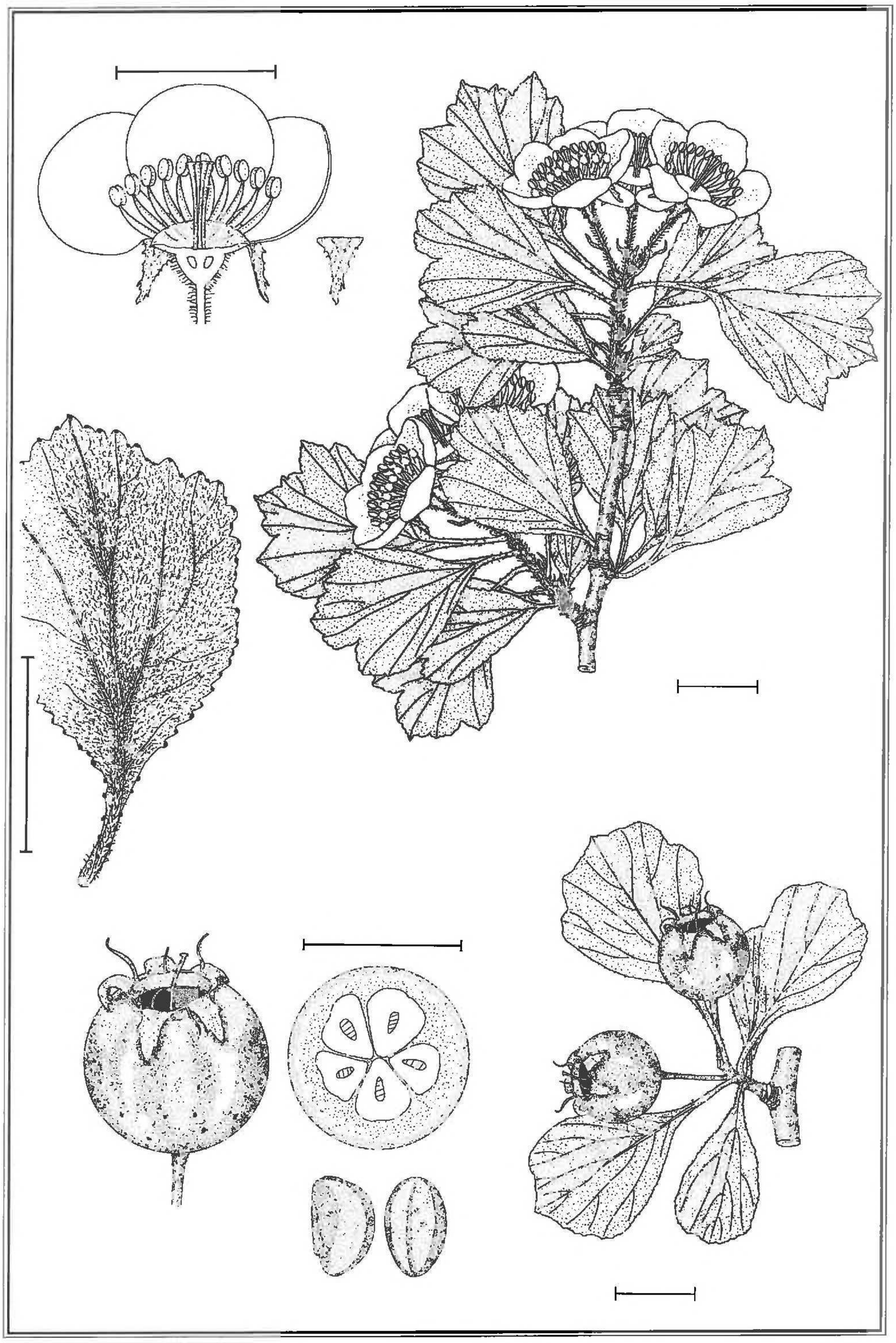

Fig. 28. Line drawing of *Crataegus furtiva* from *J.B. Phipps 6555* and *7688* (both UWO), flowering and *J.B. Phipps 6674* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

Shrubs or small trees 3–7 m tall; branchlets zig-zag at nodes; elongating twigs appressed-pubescent, 1-year old gray-brown to blackish gray; unarmed or with occasional thorns 2–3.5 cm long, ± straight, slender, purple-brown at 1 year, becoming gray. Leaves deciduous; petioles 3–9 mm long, persistently pubescent, glandular; blades 2–4 cm long at maturity, 1/3 smaller at anthesis, narrowly to broadly cuneate to obtrullate in general shape, shallowly and quite sharply 1–3 lobed subterminally at anthesis, a bit more bluntly at maturity; ends rounded to subacute in general shape; margins crenate-serrate, glandular; venation craspedodromous, with 2–3 lateral veins per side; pubescent on both surfaces, dense-tomentose abaxially on veins, often becoming floppy. Inflorescences 2–4-flowered; branches appressed-canescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 18–20 mm diam.; hypanthium externally densely

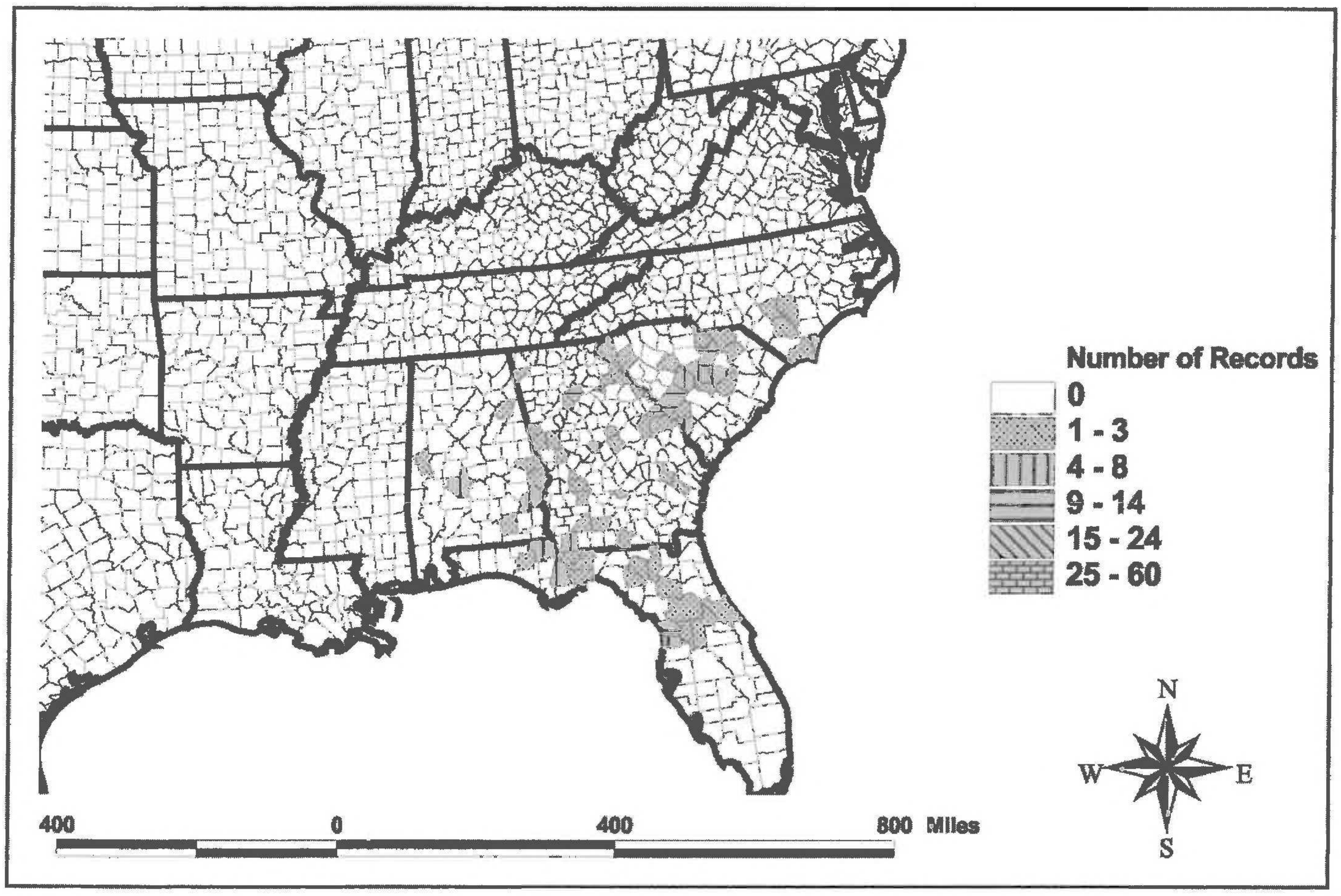

FIG. 29. County level distribution map of *Crataegus furtiva*.

canescent; calyx-lobes 4–6 mm long, narrow-triangular, abaxially somewhat pubescent, margins gland-toothed; petals ± circular, white; stamens 20, anthers ivory; styles 2–4(–5,Beadle). Fruit 9–12 mm diam., subglobose, somewhat pubescent, orange-yellow to ruddy; calyx-lobes on a distinct collar, reflexed; nutlets 2–4(–5, Beadle), dorsally sulcate, sides plane.

Distribution.—This species occurs in the southeastern United States where it is known from Georgia, South Carolina and north central Florida. There are also a few records from Alabama. It is found in open brushy places and woodland.

Crataegus meridiana is a rather poorly understood complex of long-petiolate, terminally lobed forms but more shortly or obscurely so than in *C. senta*. The general form of the leaf is not unlike that of that of *C. quaesita* although extension shoot leaves are more likely to be ± isodiametric in *C. meridiana*. *Crataegus meridiana* is quite thorny and the thorns tend to be slender. The somewhat similar *C. lassa* has rather larger leaves with blunt or obscure lobes and shares floppy leaves with *C. meridiana*. Some more delicate specimens of this species might key out via subser. *Tenues* to *C. floridana*. See also comments under *C. quaesita*.

20. Crataegus lancei J.B Phipps, sp. nov. (**Fig. 30**). TYPE: U.S.A. NORTH CAROLINA. Buncombe Co.: NW of Weaverville, New Stock Road at Alpine Meadows development, 28 Sep 2008, *R. Lance 3408* (HOLOTYPE: UWO; ISOTYPES: A, GAM, UNC, US).

Comment.—*Crataegus lancei* may prove to be the same as *C. yadkinensis* Ashe (J. Elisha Mitchell Sci. Soc. 17:17. 1900) but Ashe's protologue is insufficient for certainty and no authentic material of that species has been discovered.

Frutices vel arbores parvae, 5–8 m alti; ramuli extensi dense-pubescentes vel tomentosi; annotini purpureo-brunnei vel atri, veteriores atrocinerei; spinae nullae vel numerosae, 3–4 cm longae, purpureo-brunneae vel aliquantum atrae in anno secundo. Folia decidua; petioli 3–7 cm longi, pubescentes, glandulosi; laminae 2–3 cm longae, anguste-obovatae vel obtrullatae vel interdum oblanceolatae in forma generali, ± contractae in basi, lateriores prope apicem; apices acuti vel obtusi; pars distalis cum 1–2(–3) lobis brevibus per latus; margines glandulo-crenato-serratae; venatio craspedodroma, 1–3 venis per latus, finem habens trans latissimam folii; superficies primo canescentes vel floccosae solum prope mediam venam, subglabrescentes in maturitate, praeter caespites pilorom abaxialiter in principalibus axillis. Inflorescentiae 3–7 floratae; rami pubescentes vel dense – pubescentes, ferentes deciduas, lineares, membranaceas,

glandulo-marginatas bracteolas. Flores 10–12 mm diam.; hypanthium externe dense-pubescente, lobi calycis 3–4 mm longi, triangulares, ± pubescens abaxialiter, marginibus glandulo-serratis; petala ± circularia, alba; stamina 20, antheris cremeis; styli 3–4. Fructus 10 mm lati, ± orbiculares, saepe cuprei vel atrorubri; lobi calycis patento-reflexi; pyrenae 3–4, dorsaliter sulcatae, lateribus planis.

Shrubs or small trees 5–8 m tall; elongating twigs dense-pubescent to tomentose; 1-year old purple-brown to blackish, older dark gray; thorns lacking to numerous, 3–4 cm long, purple-brown to blackish in second year. Leaves deciduous; petioles 3–7 mm long, pubescent, glandular; blades 2–3 cm long, narrowly obovate to obtrullate or occasionally oblanceolate in general shape, ± contracted at the base, broadest near the apex; apex pointed to obtuse; end shortly 1–2(–3) lobed per side; margins glandular, crenato-serrate; venation craspedodromous, 1–3 veins per side, terminating beyond the widest part of the leaf; surfaces canescent to wooly hairy only near the midvein at first, tending to subglabrate at maturity except for tufts of hair in the main axils abaxially. Inflorescences 3–7-flowered; branches pubescent to densely pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers 10–12 mm diam.; hypanthium externally densely pubescent; calyx-lobes 3–4 mm long, triangular, ± pubescent abaxially, margins gland-toothed; petals ± circular, white; stamens 20, anthers cream; styles 3–4. Fruit 10 mm long, ± orbicular, often copper to deep red, ± pubescent; calyx-lobes patento-reflexed; nutlets 3–4, dorsally sulcate; sides plane.

Etymology.—I am pleased to honor Ron Lance, collector of the type, in the name of this species. Ron is one of the very few serious modern collectors of *Crataegus* in the southeastern United States.

Distribution.—This is a fairly common member of the thick-twigged group found from Alabama to both Carolinas as well as northern Florida and occurs in open scrub and woodland.

This is one of the narrow-leaved members of the thick-twigged group and when the narrower type of leaf, which is broadest about the middle, is plentiful it makes one of the most distinctive species in ser. *Lacrimatae*. However, leaf shape varies towards ± elliptic-oblong, unlobed, crenate-margined on the one hand to narrow-obovate (rarely narrow-ellipt-rhombic) with single well-defined but short, subterminal, tooth-like lobes each side on the other. Leaves on extension shoots only are likely to resemble those of *C. senta* when they are narrowly obtrullate and sharply lobed. Other striking features are inflorescences more floriferous than usual for the series and often dark orange to deep red, cherry-like fruit. *Crataegus lancei* may prove to be the same as *C. yadkinensis* but Ashe's protologue is insufficient for certainty and no authentic material of that species has been discovered. Annotations are mainly under *C. ?cullasagensis*, an error deriving from its type locality and Ashe's rather obscure leaf description, the error being corrected when the type of that species was discovered to belong to ser. *Pulcherrimae* or perhaps *Intricatae*.

21. Crataegus senta Beadle, Bot. Gaz. 30:341. 1900. (**Fig. 30**). TYPE: U.S.A. NORTH CAROLINA. Buncombe Co.: Biltmore, abandoned fields, 11 May 1899, Biltmore Herb. C-18 (LECTOTYPE, selected here: US; ISOTYPE: A).

Shrubs or small trees to 6 m tall; 1-year old wood purplish-brown under an exfoliating wax, older twigs deep dull gray; thorns absent or numerous, if present 1.5–5 cm long, straight to slightly recurved, purplish-brown. Leaves deciduous; petioles 0.5–1 cm long, 30%–40% length of blade, roughly pubescent, black-glandular; blades ca. 3 cm long, oblong-spatulate to cuneate in general shape; base narrow cuneate, apex acute, generally cuspidate; sharply lobed with 1–2 acute lobes per side in the distal portion; margins strongly crenate-serrate almost to base, very black-glandular at maturity; venation craspedodromous with (2–)3–4(–5) lateral veins per side; dull green and sparsely hairy above at first, paler below and pubescent along the main veins and in the axils. Leaves on extension shoots larger, relatively broader and more deeply lobed. Inflorescences 3–7-flowered; branches dense short-canescent, bearing deciduous, linear, membranous, gland-margined bracteoles; anthesis early May near Asheville, North Carolina. Flowers 15–20 mm diam.; hypanthium externally tomentose; calyx-lobes narrow triangular, abaxially ± pubescent, margins glandular-serrate; petals ± circular, white; stamens 20, anther color not recorded; styles 3–5. Infructescences with 1–3 fruits; fruit 1 cm diam., subglobose, deep red, punctate, surface mostly glabrous; calyx-lobes patent to reflexed, narrow triangular, margins ± entire; nutlets 3–5, dorsally grooved, sides smooth.

Distribution (Fig. 31).—*Crataegus senta* has a very similar distribution to *C. lancei* and is a quite widespread species known to me from western North Carolina, South Carolina (where it is most common), northern

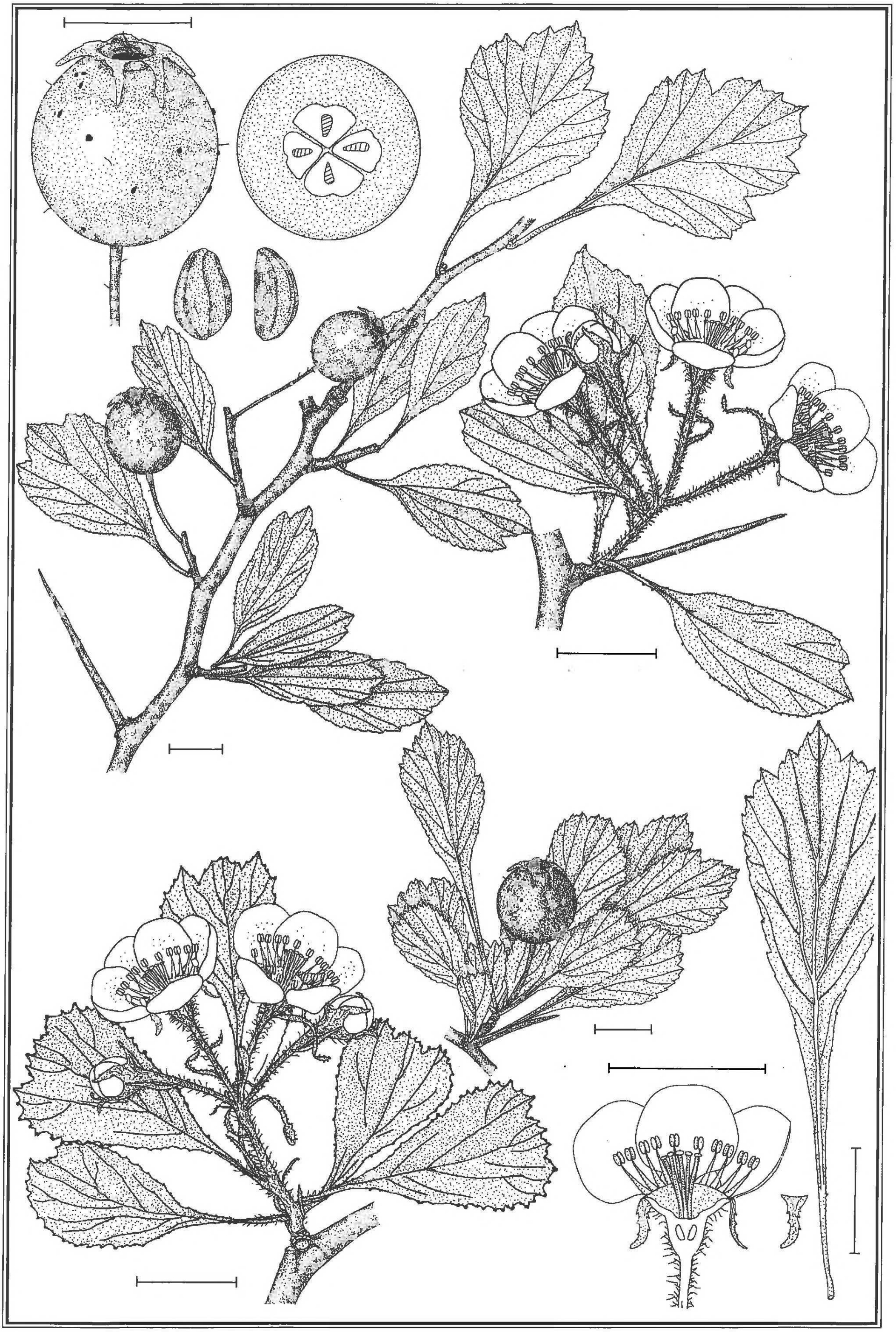

FIG. 30. Line drawings of: *C. lancei* (top) from *R. Lance s.n.*, 3 May 1999 (UWO), flowering and *R. Lance 2197 & 98-51* (UWO), fruiting; and *C. senta* (bottom) from *J.B. Phipps 6486 & 6554* (UWO), flowering and *R.K. Godfrey 82692* (UWO), fruiting. Scale bars = 1 cm. S. Laurie-Bourque del.

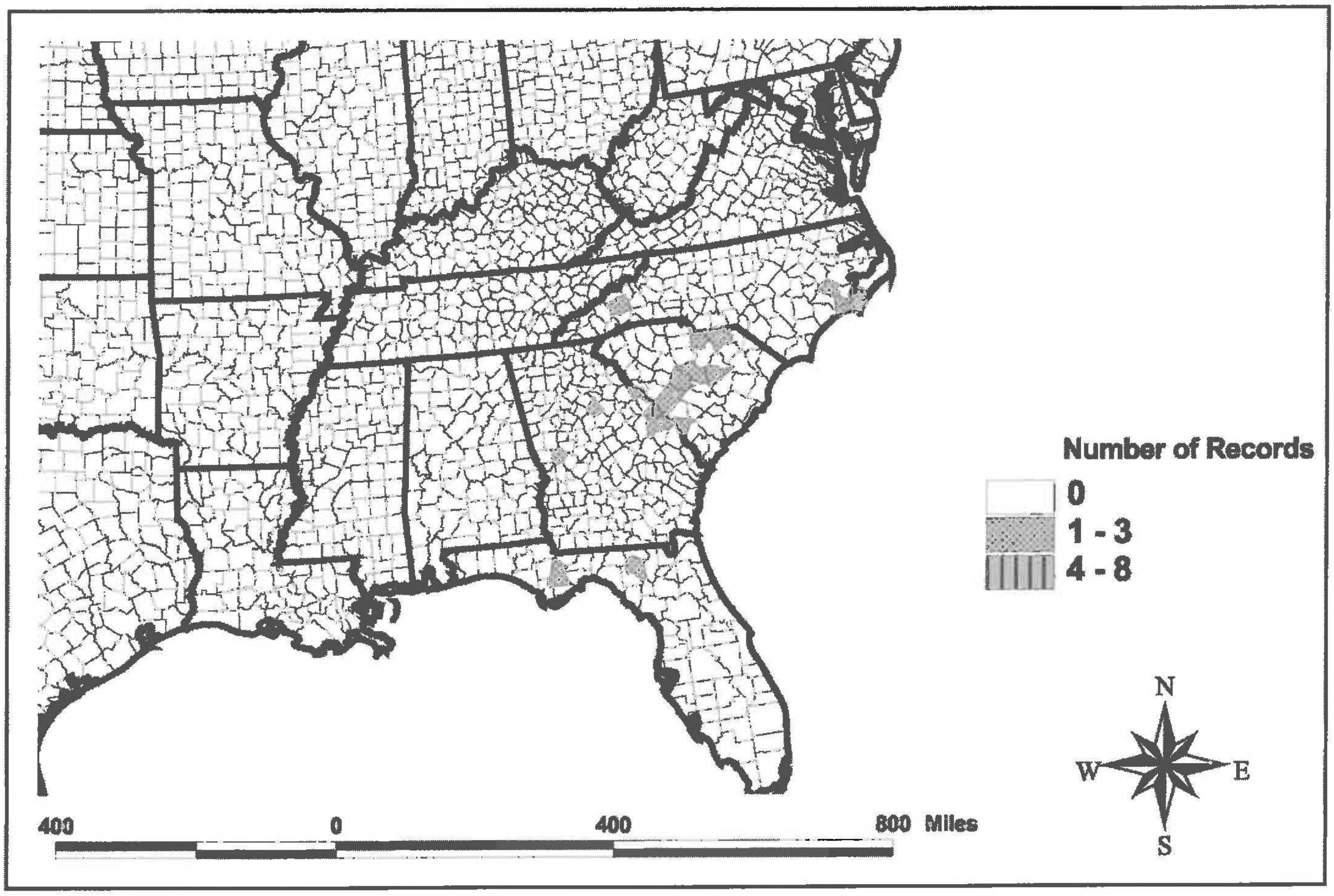

Fig. 31. County level distribution map of *C. senta*.

Florida and Georgia. However, there is also a disjunct record from West Feliciana Parish, Louisiana (not mapped). It inhabits dry pine woods, open scrub and sand plains like other members of the series.

This taxon most resembles *C. dispar* but its leaves have a narrower form and are not so lanate. Smaller leaves of *C. senta* have fewer veins (only 1–2 per side). *Crataegus senta* is very handsome in fruit.

22. Crataegus dispar Beadle, Biltmore Bot. Stud. 1:28. 1901. (**Fig. 32**). Type: U.S.A. South Carolina: Aiken Co.: Aiken, 27 Jul 1900, *C.D. Beadle 2800* (lectotype, selected here: US).

Shrubs or small trees to 5 m; thorns none or several, 3–4 cm long, straight, purple-brown at 2-year old; extending shoots densely appressed-canescent; at 2–3 years, dark gray or gray-brown. Leaves deciduous; petioles 5–15 mm long, densely appressed- pubescent when young, glandular; blades 2.3–3.5 cm long, ± obovate-spatulate in general outline, acuminate at the tip and at the base gradually tapered to the petiole; generally with about two very acute subterminal lobes per side, the sinuses with LII 15–20%; margins strikingly toothed, the teeth gland-tipped; venation craspedodromous, 2–3 veins/side; ± glabrate above and below except near the veins. Inflorescences 2–4-flowered; branches densely appressed-pubescent, bearing deciduous, linear, membranous, gland-margined bracteoles. Flowers ca. 13–16 mm diam.; hypanthium densely pubescent; calyx-lobes 3 mm long, narrow, pubescent abaxially, margins gland-toothed; petals ± circular, white; stamens 20, anthers ivory; styles 4–5. Fruit 8–12 mm diam., orbicular, nearly glabrous to slightly pubescent, bright orange-red or reddish; calyx-lobes reflexed; nutlets 4–5, dorsally ridged, laterally smooth.

Distribution (Fig. 33).—This is a somewhat scarce but distinct plant of the southeastern United States that is concentrated in South Carolina but has scattered records from Georgia, Florida and Alabama. In South Carolina I have seen it growing in extremely dry conditions.

Crataegus dispar is one of the most easily recognized members of this series, even identifiable in speci-

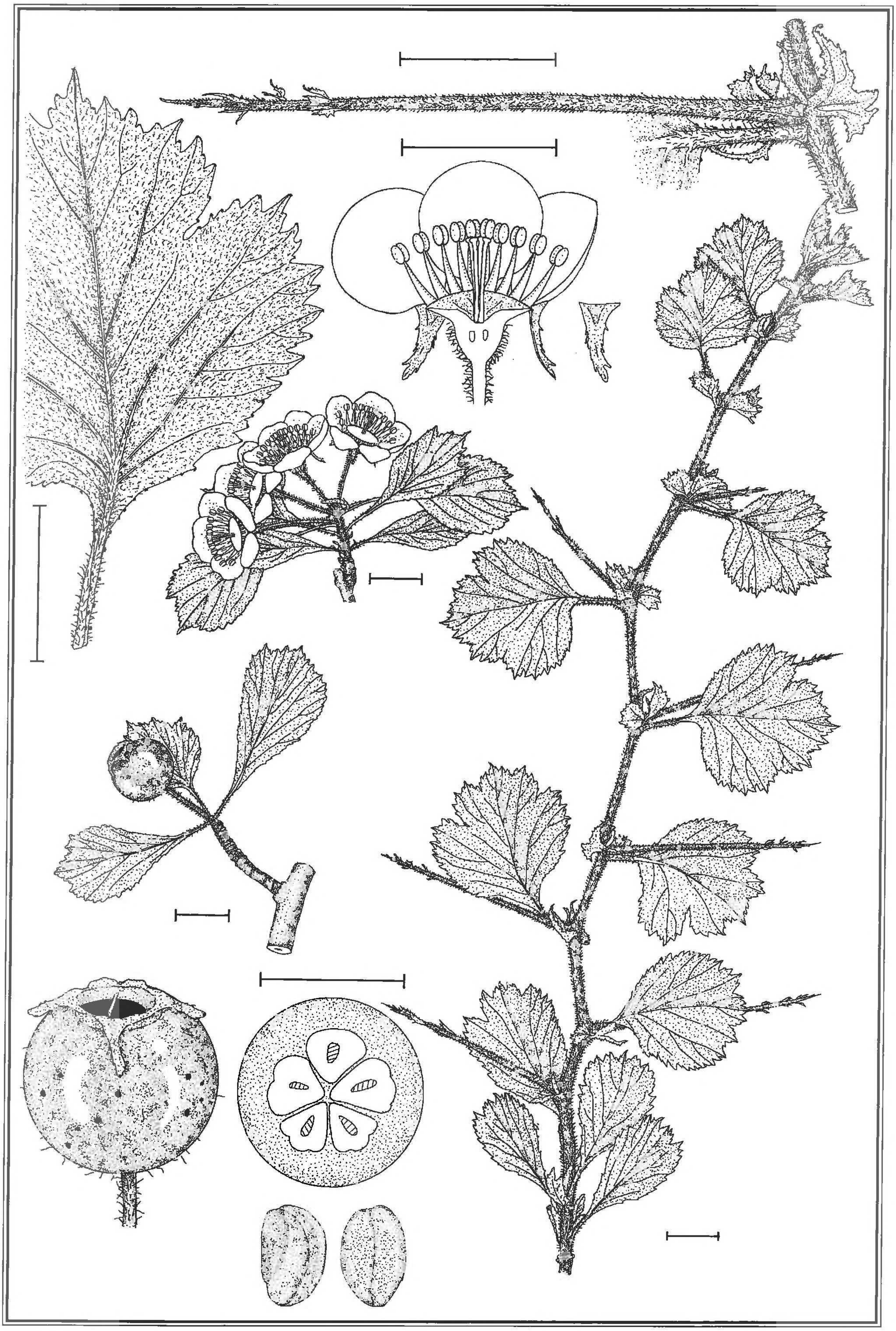

FIG. 32. Line drawing of *Crataegus dispar* from *J.B. Phipps 6505* plus photo of same (UWO), flowering, *J.B. Phipps 6685* (UWO), fruiting and *J.B. Phipps 6501* (UWO), sterile. Scale bars = 1 cm. S. Laurie-Bourque del.

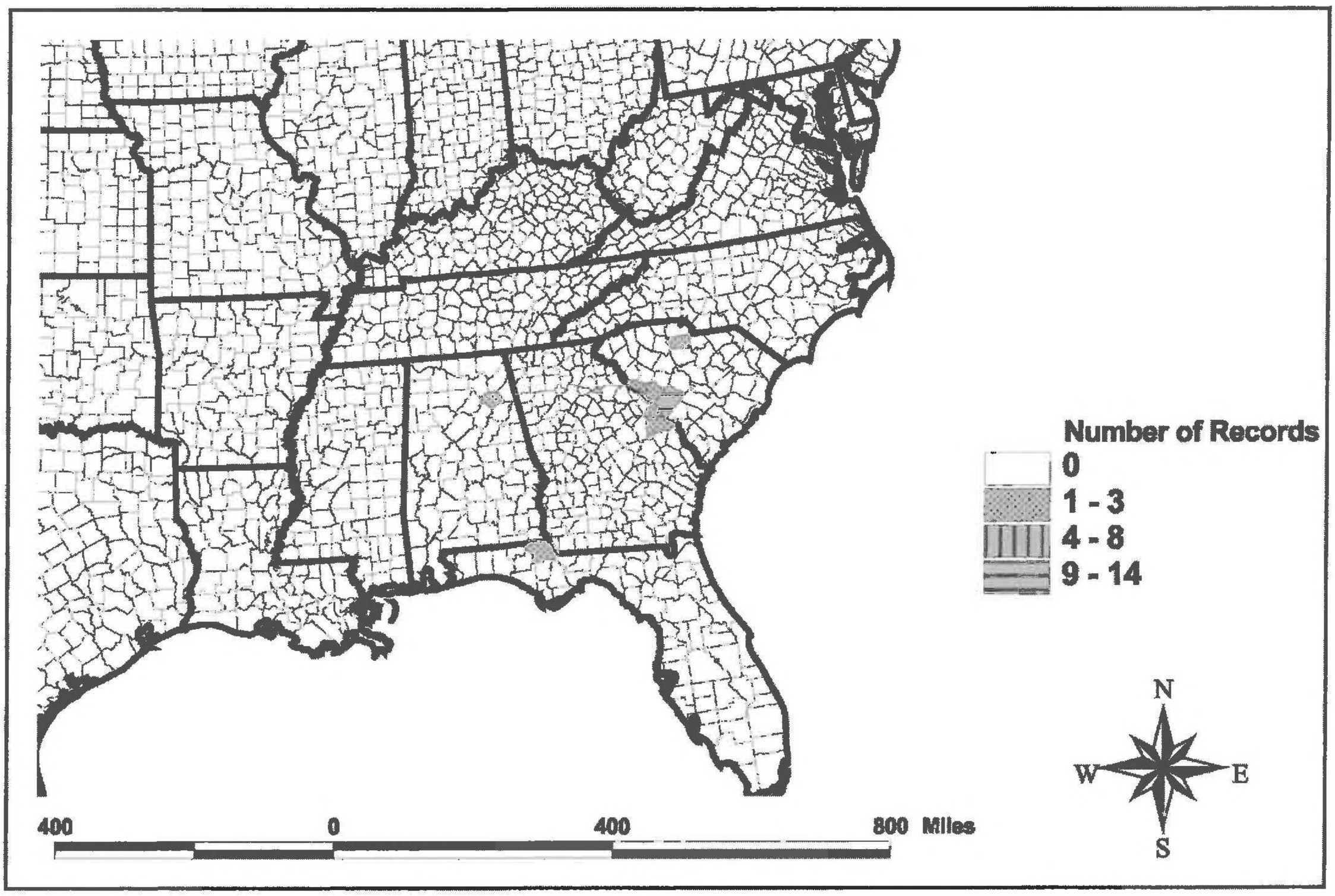

Fig. 33. County level distribution map of *Crataegus. dispar*.

mens lacking reproductive parts but otherwise adequate and sometimes from elongation shoots alone. Of note are the broad extension-shoot leaves which are often deeply incised into widely spreading, sharp segments lobed nearly to the sinuses, rather as in *C. marshallii*. The interesting foliage of this plant, added to its attractive flowers and fruit, make it potentially a beautiful ornamental for the dry landscape.

IMPERFECTLY KNOWN TAXA

Crataegus exilis is mentioned here because it has fairly distinctive type material but little else is known about it. The other two are only known from Ashe's protologues and would need typification to validate them. However, authentic material has not been located.

23. Crataegus exilis Beadle, Biltmore Bot. Stud. 1:76. 1902. Type: U.S.A. Georgia. Dougherty Co.: Albany, 25 Aug 1901, *C.D. Beadle 4093*[2] (lectotype, selected here: US).

Shrubs 2–4 m tall; bark of trunk rough; ultimate branches ± spreading (!); twigs at 1 yr old ± flexuous, color not recorded; extending twigs not recorded; thorns 1–1.5 cm long, straight, color not recorded. Leaves deciduous; petioles short, ca. 25–30% length of blade, pubescent, at least young; blades 1.5–2.5(–3) cm long, ± cuneate-obtrullate and very sharply lobed and toothed at anthesis, broad obovate to broad rhombelliptic in general shape, sides tapered into the winged upper part of the petiole; tip subacute; 0–1 blunt distal lobes per side, LII < 10%; margins with distal half crenatoserrate; pubescent at anthesis, particularly on the veins below, glabrous at maturity; venation craspedodromous, ca. 3 lateral veins per side; firm to subcoriaceous at maturity. Inflorescences 3–7-flowered; branches pilose-pubescent, bearing deciduous, oblong-linear, membranous, gland-bordered bracteoles; flowering early to mid-April. Flowers ca.15 mm wide; hypanthium externally pilose-pubescent; calyx-lobes 3–4 mm long, narrow-triangular, margins subentire to finely

toothed, teeth glandular; petals ± circular, white; stamens 20, anthers cream or ivory; styles 3–5. Fruit 5–7 mm diam., globose, red; calyx-lobes usually erose; nutlets 3–5, dorsally grooved, sides plane.

Distribution.—On sandy soils and along streambanks in south-central Georgia.

The appearance of *C. exilis* is very distinctive but unfortunately it is known only from single flowering and fruiting syntypes. It somewhat resembles a larger *C. calva* (ser. *Apricae*) but has a merely pilose inflorescence, slightly different leaf shape and somewhat different margination.

Known only from protologues:

Crataegus cuthbertii Ashe, J. Elisha Mitchell Sci. Soc. 17:15. 1900.
Crataegus pearsonii Ashe, J. Elisha Mitchell Sci. Soc. 17:10. 1900.

APPENDIX OF CITED SPECIMENS

Arrangement alphabetical by species, state and county (number following county name is number of records for county).

Crataegus alabamensis Beadle
ALABAMA. Barbour Co.: (1) Eufaula NWR at old hwy. 165, 6 Apr 1993, *D. Drennan 82* (UWO). **Dallas Co.:** (4) Selma, 11 Apr 1912, *A. Cuthbert 4* (DOV); 8–10 mi E of Selma, 3 Oct 1998, *J.B. Phipps and R. Lance 7798* (UWO); Selma, 19 Apr 1920, *T.G. Harbison 15733* (NCU); near Selma, *T.G. Harbison s.n.* (NCC). **Montgomery Co.:** (4) Montgomery, 9 Aug 1899, *Biltmore Herb. 899* (A); Montgomery, 16 Aug 1900, *Biltmore Herb. 2168* (A, GH)); Montgomery, 15 Apr 1900, *Biltmore Herb. s.n.* (A). **FLORIDA. Leon Co.:** (7) near Tallahassee, 12 Apr 1931, *E.J. Palmer, 38560* (A); N side of Tallahassee, 27 March 1976, *L.C. Anderson 4133* (FLAS, FSU, GH); SW of Tallahassee, 24 May 1983, *R.K. Godfrey 80656* (UWO); Along Sharer Rd, S of I-10, 27 March 1983, *L. Anderson 4133* (UWO); 7 mi NW of Tallahassee, *W.A. Murrill s.n.* (FLAS). **GEORGIA. Baker Co.:** (1) Limesink Lake, 22 Aug 1977, *R. Kral s.n.* (UWO). **Richmond Co.:** (1) Augusta, 19 Jul 1900, *A. Cuthbert 4* (DOV). **SOUTH CAROLINA. Aiken Co.:** (1) no locality, 31 May 1882, *H.R. Ravenel 23* (MO). **Kershaw Co.:** (1) 0.1 mi E of Richland, 18 Jul 1958, *J.A. Duke 1487* (NCU).

Crataegus attrita Beadle
ALABAMA. Greene Co.: (2) Smith Lake area, 14 Apr 1969, *J.L. Thomas 1975* (ALU); Smith Lake, 18 May 1967, *H. Naugle s.n.* (ALU). **Coffee Co.:** (2) SE of Ella, 8 Jun 1968, *R. Kral 31417* (VBB, VDB). **FLORIDA. Washington Co.:** (2) 1 mi W of Millers Ferry, 3 Apr 1958, *R.K. Godfrey 56374* (DUKE, USF). **MISSISSIPPI. Lowndes Co.:** (1) Chitlin Corners area, 15 mi S of Columbus, W side of Tombigbee River, 16 Apr 1973, *W.C. Holmes s.n.* (NATC). **SOUTH CAROLINA. Chesterfield Co.:** (1) Haw Ridge, 23 Apr 1933, *T.G. Harbison s.n.* (NCU).

Crataegus colonica Beadle
NORTH CAROLINA. Bladen Co.: (3) W shore of White Lake, 10 Jun 1948, *W.B. Fox s.n.* (NCSC); On Big Turnbull Creek, 23 Aug 1953, *L. Melvin s.n.* (NCU); 1 mi W of White Lake, 1 May 1969, *R.L. Wilbur 10747* (DUKE). **Cumberland Co.:** (6) Route 87, 5 mi SE of I-95, 4 Jul 1981, *J.B. Phipps 511* (UWO); 700m S of Mileport 36 on I-95, S of Fayetteville, 18 Aug 1993, *J.B. Phipps 6766* (UWO); 400m S of Mileport 36 on I-95, S of Fayetteville, 18 Aug 1993, *J.B. Phipps 6765* (UWO); Exit 40 of I-95 and US 301, SW corner, 18 Aug 1993, *J.B. Phipps 6764* (UWO); Exit 40 of I-95 and US 301, SW corner, 6 Apr 1991, *J.B. Phipps 6511* (UWO); 15 mi S of Fayetteville, 16 Sep 1936, *E. Wherry s.n.* (A). **Robeson Co.:** (13) 3.5 mi SSW of St. Paul's, 20 Sep 1964, *R.F. Britt 3052* (AUA, CM, 2*DHL, KY, LAF, LYN, NC, 2*USCH, WVA, WILLI); I-95 N of exit 33, 10 Aug 1993, *J.B. Phipps 6671* (UWO). **Sampson Co.:** (2) 1.1 mi NNW of Waycross, 28 Jun 1857, *J. Haesloop 30133* (NCU); no locality, 28 Apr 1933, *T.G. Harbison s.n.* (NCU). **Wilson Co.:** (1) 2.4 mi SSW of Black Creek, 21 Jun 1958, *A.E. Radford 35726* (NCU). **SOUTH CAROLINA. Beaufort Co.:** (1) Bluffton, 1882, *G. Engelman 22359* (MO). **Lexington Co.:** (2) Route 302, SW of Edmund, 10 Apr 1991, *J.B. Phipps 6502* (UWO); US 321, 2 km S of I-26, W side road, 20 Aug 1992, *J.B. Phipps 6576* (UWO).

Crataegus condigna Beadle [excluding Alabama records identified as *C. insidiosa*]
FLORIDA. Alachua Co.: (5) 7 mi N of Gainesville, 8 Aug 1972, *S.T. Anderson 57* (FLAS); Gainesville, 27 Aug 1940, *W.A. Murrill s.n.* (A); E of Gainesville, 2 Apr 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 17 Aug 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 2 Jun 1940, *W.A. Murrill s.n.* (FLAS). **Columbia Co.:** (1) SE of Ft. White, 30 Mar 1956, *R. Kral 2188* (FSU). **Gadsden Co.:** (9) Aspalaga, no date, *Biltmore Herb. 297* (NCU); River Junction, 8 Sep 1897, *A.H. Curtiss 5982* (FLAS, CM, GA, GH, MO, NCU, NY); Aspalaga, 9 Sep 1950, *H. Kurz s.n.* (NCU). **Jackson Co.:** (1) 3.3 mi N of Marianna-Cottondale, 16 Sep 1950, *H. Kurz s.n.* (NCU). **Leon Co.:** (1) Tallahassee, no date, *T.G. Harbison 5461* (NCU). **Liberty Co.:** (1) no locality, 24 Mar 1951, *H. Kurz s.n.* (FSU). **Marion Co.:** (1) Gainesville, *30 Jun 1939, W.A. Murrill s.n.* (GA). **Suwannee Co.:** (2) 1 mi S of O'Brien, 3 Apr 1940, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS, GA); 7 mi W of Live Oak, 21 Aug 1939, *Tisdale & W.A. Murrill s.n.* (FLAS). **Wakulla Co.:** (2) St. Marks, 12 Apr 1920, *T.G. Harbison 15699* (NCU); SW of jct. of US 98 and Co. Rd. 365, 21 May 1983, *R.K. Godfrey 80642* (UWO). **Washington Co.:** (1) 5 mi SE of Vernon, 31 may 1985, *L.C. Anderson 8192* (FSU). **GEORGIA. Chatham Co.:** (1) no locality, 21 Apr 1959, *E.O. Mellinger s.n.* (GH). **Columbia Co.:** (1) E of Harlem on 278, 18 Apr 1992, *J.B. Phipps 6557* (UWO). **Dougherty Co.:** (1) Albany, 18 Sep 1909, *W.W. Eggleston 5123* (MO). **Richmond Co.:** (6) Augusta, 16 Apr no year, *C.S. Sargent s.n.* (A); Augusta, 8 Apr 1919, *T.G. Harbison 41* (A); Augusta, 8 Apr

1919, *T.G. Harbison 14847* (NCU); Augusta, no date, *T.G. Harbison 6057* (NCU); Augusta, 11 Apr no year, *T.G. Harbison s.n.* (NCU); Augusta, 30 Sep 1900, *A. Cuthbert s.n.* (FLAS). **Screven Co.:** (1) 1 mi N of Statesville, 4 Sep 1968, *R. Lazor, R.K. Godfrey and J. Lazor 1067* (FSU). **NORTH CAROLINA. Carteret Co.:** (2) Lennox Point, E of Beaufort, 12 Sep 1947, *H.T. Scofield, L.A. Whitford and W.B. Fox 1167* (NCSC); Lennox Point, 16 Jul 1965, *M. Creech s.n.* (DUKE). **Craven Co.:** (2) New Bern, 17 Apr 1918, *T.G. Harbison 14065* (NCU); 2.8 mi E of Ft. Barnwell, 9 Jun 1958, *A.E. Radford 37668* (NCU). **Duplin Co.:** (1) 2.6 mi NE of Magnolia, 27 Apr 1957, *H.E. Ahles 24052 & G. Ramseur* (NCU). **Florence Co.:** (1) E of Clausen, 24 May 1957, *C.R. Bell 7529* (USF). **Lenoir Co.:** (2) 2 mi W of La Grange, 22 Jun 1957, *A.E. Radford 25681* (NCU); 2 mi W of La Grange, 6 May 1957, *A.E. Radford 22117* (NCU). **McDowell Co.:** (1) 1 mi SE of jct. NC 264 and US 221, 1 Sep 1956, *H.E. Ahles 17770* (NCU). **Moore Co.:** (1) 2 mi E of Carthage, 25 Apr 1948, *W.R. Fox & R.K. Godfrey* 1382 (NCSC). **New Hanover Co.:** (1) 4 mi W of Wilmington on road to Elizabethtown, 26 Apr 1936, *W.C. Coker s.n.* (NCU). **Polk Co.:** (1) Columbus, 20 Aug 1921, *D.C. Peattie 1329* (NCU). **Sampson Co.:** (1) 3.8 mi E of Falcon, 5 May 1957, *H.E. Ahles & H. Laing 24548* (NCU). **Wayne Co.:** (1) 4 mi W of Pikeville, 29 Apr 1956, *J. Rose 56* (NCU). **SOUTH CAROLINA. Aiken Co.:** (5) no locality, Apr 1890, *H.W. Ravenel 3* (A); near Windsor, 14 Apr 1932, *E.J. Palmer 39877* (A); no locality, 21 Apr 1880, *H.W. Ravenel s.n.* (A); no locality, 12 Sep 1909, *W.W. Eggleston 5048* (MO); no locality, 31 Mar 1952, *W.R. Kelley & W.T. Batson s.n.* (USCH). **Allendale Co.:** (1) SC 3 at 8.1 km S of US 301, 19 Apr 1992, *J.B. Phipps 6565* (UWO). **Bamberg Co.:** (1) SW of Govan, 6 Apr 1957, *H.E. Ahles & J.G. Haesloop 22207* (NCU). **Barnwell Co.:** (1) no locality, 31 Mar 1952, *W.R. Kelley & W.T. Batson s.n.* (USCH). **Berkeley Co.:** (1) West side of county, 7 Apr 1957, (NCU) *H.E. Ahles & J.G. Haesloop 22390* (NCU). **Calhoun Co.:** (2) no locality, no date, *H.B. Mooney & T.H. Stork s.n.* (USCH); 2 mi N of St Matthews, 31 Mar 1957, *H.E. Ahles & J.G. Haesloop 21751* (NCU). **Cherokee Co.:** (1) 0.4 mi N of Blacksburg, 0.5 m W SW of jct. US 29 & Co. Rd. 52, 18 Sep 1957, *H.E. Ahles 34198* (NCU). **Chester Co.:** (1) 3 mi E of Leeds, 20 Apr 1957, *O.M. Freeman 57143* (NCU). **Chesterfield Co.:** (4) Sugar Loaf Mountain, 13 May 1932, *B.E. Smith s.n.* (NCU); Jct. US 1 and Co. Rd. 20, S of Cheraw, 16 May 1976, *J.C. Solomon 1951* (CM); SW of Cheraw, 16 May 1976, *D.E. Boufford 18306* (MO); Haw Ridge, near McBee, 3 Apr 1935, *V. Matthews & B.E. Smith s.n.* (USCH). **Dillon Co.:** (1) 2.6 mi NW of Smithboro, 18 Apr 1957, *G. Ramseur & H.E. Ahles 23300* (NCU). **Florence Co.:** (2) E of Clausen, 24 May 1957, *C.R. Bell 7529* (NCU, USF). **Hampton Co.:** (1) SC 3 at 25.2 km S of US 301, 19 Apr 1992, *J.B. Phipps 6563* (UWO). **Lexington Co.:** (3) no locality, Mar 1963, *W.R. Kelley & W.T. Batson s.n.* (USCH); US 32, abt. 2 km S of I-26, 20 Apr 1992, *J.B. Phipps 6577* (UWO); US 321 0.5 km S of US 30, Allen Valley Rd., 20 Apr 1992, *J.B. Phipps 6578* (UWO). **Marlboro Co.:** (1) 4 mi S of NC state line, 4 Jun 1958, *J.A. Duke 892* (NCU). **Orangeburg Co.:** (3) US 178, 5.6 mi NW of Orangeburg, 30 Mar 1957, *H.E. Ahles & J.G. Haesloop 21561* (FLAS, NCU); W of Copeland, 26 Sep 1957, *H.E. Ahles & J.G. Haesloop 35116* (NCU). **Richland Co.:** (1) near Columbia, 19 May 1934, *E.J. Palmer 42411* (A).

Crataegus crocea Beadle

ALABAMA. **Dallas Co.:** (1) Rte. 140, Mt. Carmel Church, 8–10 mi E of Selma, 3 Oct 1998, *J.B. Phipps & R. Lance 7806* (UWO). **Pike Co.:** (4) 5 mi SE of Troy, 29 Sep 1979, *S McDaniel and C Duncan 22940* (ALU, FSU, GA, IBE). **FLORIDA. Alachua Co.:** (36) W of Gainesville, 22 Mar 19??, *W.W. Ashe s.n.* (FSU); near Gainesville, N of Sevenville, 01 Aug 1940, *W.A. Murrill s.n.* (FLAS, GA); Jct. of Fla 26 and Millhopper Rd., W side of Gainesville, 22 Mar 1968, *WG D'Arcy 2370* (FLAS, LAF, MO, NY, USF); W side of Payne's Prairie near Gainesville, 19 Jul 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 31 Jul 1940, *W.A. Murrill s.n.* (3*FLAS); Gainesville, 07 Apr 1931, *E.J. Palmer 38429* (MO); Gainesville, 21 Aug 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 02 Jul 1939, *W.A. Murrill s.n.* (2*A); Gainesville, 29 Jul 1939, *W.A. Murrill s.n.* (FLAS); Gainesville, 02 May 1941, *W.A. Murrill s.n.* (GA); Gainesville, 21 Jul 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 26 Feb 1982, *J.B. Phipps 5133* (UWO); Gainesville, 26 Feb 1982, *J.B. Phipps 5131* (UWO); Gainesville, 26 Feb 1982, *J.B. Phipps 5130* (UWO); Gainesville, 26 Feb 1982, *J.B. Phipps 5132* (UWO); Payne's Prairie Nature Reserve, 17 Aug 1993, *J.B. Phipps 6767* (UWO); Payne's Prairie Nature Reserve, 17 Aug 1993, *J.B. Phipps 6759* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6653* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6661* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6657* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6656* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6654* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6763* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6658* (UWO); Payne's Prairie Nature Reserve, 12 Mar 1993, *J.B. Phipps 6659* (UWO); Kanapaha Rd., 0.5 mi from end, 12 Mar 1993, *J.B. Phipps 6670* (UWO); S.R. 346. SE of Archer, 12 Mar 1993, *J.B. Phipps 6665* (UWO); Rte. 24, SW of Kanapaha and 0.4 km SW of Rte. 127, 12 Mar 1993, *J.B. Phipps 6669* (UWO). **Citrus Co.:** (8) Rosehill 1 m N of Hernando Co., 21 Apr 1959, *G.R. Cooley and R.J. Eaton 6460* (FSU, GH, USF); 1 mi E of Holder, 26 Mar 1965, *J. Beckner 661* (FLAS); Citrus Springs, 10 Mar 1993, *J.B. Phipps 6636* (UWO); E side of US 41, abt. 3 mi N of Hernando at old bend in road, 10 Mar 1993, *J.B. Phipps 6638* (UWO); E side of US 41, abt. 3 mi N of Hernando at old bend in road, 10 Mar 1993, *J.B. Phipps 6639* (UWO); W side of US 41, S of Citrus Springs, 10 Mar 1993, *J.B. Phipps 6637* (UWO). **Clay Co.:** (12) Magnolia Springs, 09 Apr 1920, *T.G. Harbison 5674* (A); Green Cove Springs, 29 Jun 1939, *W.A. Murrill s.n.* (FLAS); Magnolia Springs, 09 Apr 1920, *T.G. Harbison 5677* (A); Hibernia, March 1869, *W.M. Canby s.n.* (GH); Magnolia Springs, 09 Apr 1920, *T.G. Harbison 5680* (A); Green Cove Springs, 26 Jun 1940, *E.D. Murrill s.n.* (A, MO); Green Cove Springs, 01 Apr 1941, *Watson and W.A. Murrill s.n.* (GA); Magnolia Springs, 09 Apr 1920, *T.G. Harbison 15670* (A); S.R. 16 on N side, 200 m W of side road south to Clay Co. Fairground, 11 Mar 1993, *J.B. Phipps 6643* (UWO); S.R. 16 on N side, 200 m W of side road south to Clay Co. Fairground, 11 Mar 1993, *J.B. Phipps 6641* (UWO); Penney farms and Green Cove Springs, 11 Mar 1993, *J.B. Phipps 6642* (UWO). **Dade Co.:** (1) SW 189 Ave and Mowry St, 18 Mar 1969, *G.N. Avery 609* (FLAS). **Dixie Co.:** (1) Old Town, 30 Mar 1920, *T.G. Harbison 5603* (A). **Gadsden Co.:** (3) no locality, 06 Sep 1940, *W.A. Murrill and W.B. Tisdale s.n.* (FLAS); Open pineland, 0.75 mi W of Rosedale, 15 Sep 1983, *R.K. Godfrey 80955* (UWO); 1.4 mi from Dellwood, 25 Apr 1983, *R.K. Godfrey 80559* (UWO). **Gilchrist Co.:** (3) Between Newberry and Trenton, 11 Mar 1975, *R.K.*

Godfrey 74173 (2*FSU, MO). **Hardee Co.:** (1) 10 mi W of Bowling Green, 22 Jul 1977, *E. Kuczynski s.n.* (USF). **Hernando Co.:** (3) Chinsegut Hill, 18 Mar 1958, *J. Monachino and G.R. Cooley 5644* (USF); Brookesville along Crystal River Rd, 12 Mar 1936, *H.H. Hume s.n.* (FLAS); In pine-oakwoods SW Florida Water Management District lands, 8 mi S of Brooksville, no locality, 15 Mar 1977, *T.F. Rochow s.n.* (USF). **Hillsborough Co.:** (12) Tampa, USF campus, 02 Aug 1961, *O. Lakela 24519* (FLAS, FSU, GH); Tampa, USF campus, 11 Mar 1961, *O. Lakela 23807* (FLAS, FSU, GH); Tallahassee, 04 Apr 1923, *T.G. Harbison 6073* (A); USF Ecology area, 16 Mar 1983, *D. Richardson 901* (USF); USF Campus, 14 Apr 1963, *Students s.n.* (USF); E side of USF campus Tampa, 25 Mar 1961, *O. Lakela 23925* (USF); no locality, Jun 1971, *O. Lakela 32160* (USF); Tampa, campus of South Florida University, 8 Mar1993 *J.B. Phipps 6639* (UWO). **Jackson Co.:** (4) Dellwood, 28 Jun 1972, *R.K. Godfrey 71431* (FLAS, FSU); Marianna, 15 Mar 1937, *L.E Arnold and E. West s.n.* (FLAS); Chattahoochee, 03 Apr 1900, *C.S. Sargent s.n.* (DOV). **Kershaw Co.:** (1) US 1, 8 km SW of lights at Bethura, 6 Apr 1991, *J.B. Phipps 6505* (UWO). **Lafayette Co.:** (2) 4 mi W of Mayo, 21 Aug 1939, *W.A. Murrill and W.B. Tisdale s.n.* (2*FLAS). **Lake Co.:** (2) Tavares, 22 Mar 1901, *Biltmore Herb. 4020* (A); Tavares, 15 May 1900, *A.H. Curtiss 6617* (GH). **Leon Co.:** (7) Along Sharer Rd., N side of Tallahassee, 27 Mar 1976, *L.C. Anderson 4133* (FLAS); Tallahassee, 06 Apr 1920, *T.G. Harbison 5464* (A); near Tallahassee, 09 Apr 1929, *E.J. Palmer 35213* (2*A); W end of W Campus FSU, 09 Mar 1950, *H Kurz s.n.* (FSU); Tallahassee, 27 Mar 1977, *R.K. Godfrey 75772* (FLAS, FSU). **Liberty Co.:** (3) Tallahassee, 12 Apr 1972, *P. Elliot 224* (FSU); Torreya State Park, 04 Jul 1972, *R.K. Godfrey 71510* (FLAS); Torreya State Park, 22 Mar 1982, *R.K. Godfrey 79452* (FSU). **Live Oak Co.:** (1) no locality, 13 Apr 1900, *S.M. Tracy 6851* (MO). **Madison Co.:** (6) Ellaville, 21 Aug 1939, *W.A. Murrill and W.B. Tisdale s.n.* (3*FLAS); near Ellaville, 05 Sep 1940, *W.A. Murrill and W.B. Tisdale s.n.* (FLAS, GA); Ellaville, 21 Aug 1939, *E.J. Palmer s.n.* (A). **Marion Co.:** (22) N side of road near Citra, 26 Jul 1940, *W.A. Murrill s.n.* (FLAS); 8 mi S of Ocala, 23 Jun 1983, *N.L. Mawhinney 234* (USF); Citra, 13 Jun 1940, *W.A. Murrill s.n.* (FLAS); Cherryhill, 29 May 1942, *J.R. Watson s.n.* (FLAS); Citra, 26 Jul 1940, *W.A. Murrill s.n.* (FLAS); Citra, 10 Aug 1939, *W.G. Murrill and Hixon* (sp?) *s.n.* (FLAS); 4 mi W of Ocala, 28 Mar 1958, *G.R. Cooley and R.J. Eaton 5756* (GH, USF); E part of Ocala, 17 Jun 1940, *W.A. Murrill s.n.* (FLAS); Ocala, 20 Aug 1901, *Biltmore Herb. 134007* (GH); Ocala, 21 Mar 1901, *Biltmore Herb. 134007* (GH); Ocala, 06 Apr 1929, *E.J. Palmer 35171* (A); Dunnellon, 11 Aug 1940, *W.A. Murrill s.n.* (FLAS); near Citra, 02 Apr 1941, *W.A. Murrill s.n.* (GA); Citra, 02 Apr 1941, *W.A. Murrill s.n.* (FLAS); Citra, 21 Aug 1901, *Biltmore Herb. 4038* (GH); Citra, 22 Mar 1901, *Biltmore Herb. 4038* (GH); Citra, 13 Jun 1940, *Watson and W.A. Murrill s.n.* (FLAS); 1 mi NNE of Dunellon, 10 Apr 1993, *J.B. Phipps 6633* (UWO); 1 mi NNE of Dunellon, 10 Apr 1993, *J.B. Phipps 6635* (UWO); 1 mi NNW of Dunellon, W of US 41, S of humpback bridge, 10 Apr 1993, *J.B. Phipps 6634* (UWO); 1 mi NNW of Dunellon, W of US 41 at the humpback bridge, 13 Apr 1993, *J.B. Phipps 6644a* (UWO). **Ocala Co.:** (3) 3 mi S of Ocala, Aug 1939, *W.A. Murrill s.n.* (A); no locality, August 1901, *Biltmore Herb. R4007* (A); no locality, Mar 1901, *Biltmore Herb. R4007* (A). **Orange Co.:** (6) Apr 1923, *G.K. Jennings and O.E. ?? s.n.* (CM); Along US441, 2 mi SW of 2 Ellwood, 31 Mar 1977, *L. Baltzell 9408* (FLAS); 1 mi W of US hwy. 441 and State hwy. 421, 07 Mar 1965, *I.L. Wiggins 19357* (FLAS); 1 mi S of Ocoee SE corner of Lake Apopka at NE corner of jct. of Fla 50 C-526 and C-439, 20 Apr 1981, *R.P. Wunderlin and J. Beckner 8955* (USF); no locality, 16 Mar 1924, *F.W.H. 8965* (GH); Orlando 24 May 1929, *W.C. Edwards s.n.* (FLAS). **Osceola Co.:** (2) Kissimmee Township 27, 01 Mar 1938, *M.L. Singletory s.n.* (DUKE); N side of Fla 532, 1.5 mi E of Interstate 4 NW of Loughman, 04 Jul 1977, *A.G. Shuey 1942* (USF). **Pasco Co.:** (1) 2.5 mi E of hwy. 41 and 54, 25 Mar 1961, *G.M. Riegler 23895* (USF). **Polk Co.:** (3) W of Bartow, 08 Jun 1931, *J.B. McFarlin 6391* (A, FLAS); 3 mi NNW of W Frostproof, 9 Apr 1993, *J.B. Phipps 6630* (UWO). **Suwanee Co.:** (2) 7 mi W of Live Oak, 21 Aug 1939, *W.A. Murrill and W.B. Tisdale s.n.* (A); Hildreth, 10 Jul 1940, *W.A. Murrill s.n.* (FLAS). **Wakulla Co.:** (2) 1 mi S of Crawfordville by US Rte. 319, 25 Mar 1982, *R.K. Godfrey 79460* (IBE); near Wakulla River, 10 Apr 1931, *E.J. Palmer 38509* (A). **Walton Co.:** (1) Sand Hills, *Chapman s.n.* (NY). **?? Co.:** (1) no locality, no date, *Chapman s.n.* (NY). **GEORGIA. Bibb Co.:** (1) 7 mi SE of Macon, E side of State Rd 87, 12 Apr 1940, *W.H. Duncan 1906* (GA). **Calhoun Co.:** (1) Albany, 18–19 Sep 1909, *W.W. Eggleston 5117* (MO). **Charlton Co.:** (1) near Trader's Hill, 05 Aug 1959, *E Cypert s.n.*(GA). **Decatur Co.:** (5) Woods edge by hwy. 97 6 mi NE Bainbridge, 15 Jul 1976, *RA Norris 3178* (NATC); ¾ mi W of Brinson near Seminole Co. line, 31 Mar 1982, *R.K. Godfrey 79498* (2*FSU); Mt Pleasant community by Ga Rte. 97, 10 mi N of Bainbridge, 31 Mar 1982, *R.K. Godfrey 79497* (FSU, UWO). **Lowndes Co.:** (3) 4 mi NW of Hahira, 20 Jul 1965, *W.R. Faircloth 2476* (GA, MO, NCU). **Pulaski Co.:** (1) near Hawkinsville, 26 Jun 1902, *R.M. Harper 1374* (MO). **Screven Co.:** (1) 17.6 km N of Newington, 18 Apr 1992, *J.B. Phipps 6562* (UWO). **Talbot Co.:** (4) Rte. 90, 2 km ENE of Geneva, 9 Apr 1991, *J.B. Phipps 6483* (UWO); Rte. 90, 2 km ENE of Geneva, 9 Apr 1991, *J.B. Phipps 6480* (UWO); Rte. 96, abt. 1 mi E of Junction City, 9 Apr 1991, *J.B. Phipps 6493* (UWO); Rte. 96, 1 mi E of Junction City on S side of road, 9 Apr 1991, *J.B. Phipps 6490* (UWO). **Tatnall Co.:** (2) 2 mi W of Reidsville, 03 Apr 1948, *A. Cronquist 4949* (GH, MO). **NORTH CAROLINA. Cumberland Co.:** (2) NC53 and Co. Rd 2228, N of Jerome, 16 May 1976, *J.C. Solomon 5511* (CM, MO). **Johnston Co.:** (1) 2 mi S of Smithfield, 03 May 1940, *Radford and Stewart 152* (NCU). **SOUTH CAROLINA. Beaufort Co.:** (2) Bluffton, *J. Mellichamp s.n.* (NY); Bluffton, 1876, *J. Mellichamp s.n.* (NY). **Calhoun Co.:** (1) 4.3 mi ENE of St. Matthews, 14 Apr 1968, *S.W. Leonard 1264* (NCU). **Darlington Co.:** (1) Hartsville, 03 Sep 1909, *W.W. Eggleston 4932* (MO). **Kershaw Co.:** (1) near Camden, 19 Apr 1932, *E.J. Palmer 39956* (A). **Marlboro Co.:** (1) 12 mi N of Bennetsville near SC 38-166 jct., 30 Sep 1956, *A.E. Radford 18977* (NCU). **Richland Co.:** (1) 5335 Hardscrabble Rd., Blythewood, 08 Apr 1994, *D.F. Adcock 78* (USCH).

Crataegus dispar Beadle

ALABAMA. Etowah Co.: (1) Hinds Road Gadsden, 19 Sep 1999, *R. Lance s.n.* (UWO). **FLORIDA. Jackson Co.:** (1) Calhoun-Jackson Co. line 5 mi S of I-10, 21 Jun 1982, *R.K. Godfrey 79891* (UWO). **GEORGIA. Burke Co.:** (3) S of McBean and N of Crystal Lake Road, 13 Aug 1993, *J.B. Phipps 6706* (UWO); Route 56 N of intersection with 80 just N of Lake Crystal Road, 13 Aug 1993, *J.B. Phipps 6501* (UWO); S of McBean and N of Crystal Lake Road, 13 Aug 1993, *J.B. Phipps 6708* (UWO). **Clark Co.:** (1) Carlton

Woods, 20 Apr 1923, *Miller 3213* (GA). **Richmond Co.:** (3) Augusta, 31 Mar 1923, *T.G. Harbison s.n.* (NCU); Augusta, 11 Apr 1916, *W.W. Ashe 19* (2*NCU). **SOUTH CAROLINA. Aiken Co.:** (8) no locality, 3 Apr 1882, *H.W. Ravenel s.n.* (GH); 14 Apr 1885, *C.E. Flavian s.n.* (3*NY); SE of N Augusta, 12 Apr 1962, *H.E. Ahles and P.J. Crutchfield 56348* (NCU); Route 39 exactly 10.7 mi WNW of Wagener, 12 Aug 1993, *J.B. Phipps 6685* (UWO); US 278 1.7 mi E of SC 19, 12 Aug 1993, *J.B. Phipps 6686* (UWO); Route 39 exactly 10.7 mi NW of Wagener, 10 May 1991, *J.B. Phipps 6505* (UWO). **Chester Co.:** (2) where SC 72 crosses Broad Road, 4 Nov 1981, *J.B. Phipps 5127* (UWO); where SC 72 crosses Broad Road, 4 Nov 1981, *J.B. Phipps 5128* (UWO). **Edgefield Co.:** (1) 9 mi SSW of Trenton, 12 May 1957, *A.E. Radford 22501* (NCU). **McCormick Co.:** (1) Sumter National Forest SE of Clark, 16 Apr 1958, *H.R. Totten 1613* (NCC).

Crataegus egens Beadle
ALABAMA. Clark Co.: (1) no locality, 18 Jul, *C. Mohr s.n.* (MSC). **Henry Co.:** (1) Hwy. 95 S mm 46, 1 Mar 1993, *J.B. NELSON Drennen 74* (UWO). **FLORIDA. Alachua Co.:** (9) Gainesville, 21 Jul 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 25 Jul 1940, *W.A. Murrill and R.J. Wilmet s.n.* (FLAS); S.R. 346 SE of Archer fenceline, 12 Mar 1993, *J.B. Phipps 6664* (UWO); S.R. 346 SE of Archer fenceline, 12 Mar 1993, *J.B. Phipps 6662* (UWO); S.R. 346 SE of Archer fenceline, 12 Mar 1993, *J.B. Phipps 6663* (UWO); Gainesville, 26 Feb 1982, *J.B. Phipps 5129* (UWO); Rte. 24, SW of Kanapaha and 0.4 km SW of SW127 St. [CH], 12 Mar 1993, *J.B. Phipps 6668* (UWO); Gainesville, University of Florida Campus, 12 Mar 1993, *J.B. Phipps 6652* (UWO); University of Florida grounds, 24 Jun 1983, *R.K. Godfrey 80734* (FSU). **Clay Co.:** (23) Hibernia, Mar 1869, *W.M. Canby s.n.* (MO, NCU, 4*NY); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5673* (A); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 15664* (NCU); Magnolia Springs, 23 Sep 1923, *T.G. Harbison 15673* (A, NCU); Magnolia Springs, 8 Apr 1920, *T.G. Harbison 15677* (NCU); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 15775* (NCU); Magnolia Springs, 23 Sep 1923, *T.G. Harbison 5676* (A); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6750* (UWO); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6751* (UWO); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6755* (UWO); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6754* (UWO); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6753* (UWO); Between Penny Farms and Green Cove Springs, 16 Aug 1993, *J.B. Phipps 6752* (UWO); Between Penny Farms and Green Cove Springs, 11 Mar 1993, *J.B. Phipps 6646* (UWO); Between Penny Farms and Green Cove Springs, 11 Mar 1993, *J.B. Phipps 6645* (UWO); Between Penny Farms and Green Cove Springs, 11 Mar 1993, *J.B. Phipps 6647* (UWO); Between Penny Farms and Green Cove Springs, 11 Mar 1993, *J.B. Phipps 6648* (UWO). **Duval Co.:** (3) Jacksonville, 1873, *C.E. Faxon s.n.* (GH); Old fields near Jacksonville, 1 Aug 1894, *A.H. Curtiss 4552* (UWO); Old fields near Jacksonville, 15 Mar 1894, *A.H. Curtiss 4552* (UWO). **Gadsden Co.:** (1) Aspalaga, 9 Sep 1950, *H. Kurz s.n.* (FSU). **Jackson Co.:** (2) 2 mi E of Grand Ridge, 27 Mar 1964, *S. McDaniel 4012* (IBE, FSU). **Lafayette Co.:** (4) Old Town, 20 Mar 1920, *T.G. Harbison 5611* (A, NCU); Old Town, 30 Mar 1920, *T.G. Harbison 5623* (A); Old Town, 30 Mar 1920, *T.G. Harbison 5610* (A). **Lake Co.:** (1) near Paisley, 25 Apr 1954, *E. Pritchard 690* (FSU). **Liberty Co.:** (6) Bristol, 23 Aug 1901, *Biltmore Herb. 4037* (A); Bristol, 21 Aug 1901, *Biltmore Herb. 6755* (GH); Bristol, 1 Apr 1901, *Biltmore Herb. 4037* (A); Bristol, 2 Apr 1902, *Biltmore Herb. 6023* (GH); Torreya Park, 24 Mar 1951, *H. Kurz s.n.* (FSU); Fla. Rte. 270 vicinity of Sweetwater community, 12 Apr 1982, *R.K. Godfrey 79569* (UWO). **Madison Co.:** (4) Ellaville, 5 Sep 1940, *W.A. Murrill and W.B. Tisdale* (FLAS); Ellaville, 3 Apr 1940, *W.A. Murrill and W.B. Tisdale* (FLAS); 13.9 mil E of Madison by US Rte. 90, 28 Apr 1982, *R.K. Godfrey 79687* (UWO); 13.9 mi E of Madison, 28 Apr 1982, *R.K. Godfrey 79688* (UWO). **Marion Co.:** (2) Ocala, Apr 1900, *M. Rodman s.n.* (USF); Citrus, 10 Aug 1939, *W.A. Murrill and Hixon* [?sp] *s.n.* (FLAS). **St. John's Co.:** (2) St. Augustine, Feb 1875, *M.C. Reynolds s.n.* (MO, NY). **Suwanee Co.:** (3) 1 mi E of Ellaville, 31 Mar 1957, *R. Kral 4363* (FLAS, FSU, LAF). **GEORGIA. Albany Co.:** (1) no locality, 22 Jun 1901, *H.C. Comtip s.n.* (NCU). **Camden Co.:** (1) 10 mi E of Folkston, 5 Apr 1941, *W.H. Duncan 3147* (GA). **Decatur Co.:** (1) 6 mi NE Bainbridge, 27 Aug 1948, *R.F. Thorne and W.C. Muenscher 8655* (GA). **Early Co.:** (1) no locality, 29 Jul 1946, *W.H. Duncan 6796* (A). **Emmanuel Co.:** (1) no locality, 30 Mar 1931, *E.J. Palmer 38270* (A). **Liberty Co.:** (1) near Hinesville, 24 Apr 1944, *W.C. Grimm s.n.* (CM). **Lowndes Co.:** (4) no locality, 27 Mar 1980, *K.D. Perkins and W. Judd 2596* (FLAS, FSU, WILLI, UWO). **Randolph Co.:** (1) N of Cuthbert, 28 Mar 1948, *R.F. Thorne and W.C. Muenscher 7688* (GA). **Schley Co.:** (1) Ken Brown Conservation Easement, 4 Jul 1993, *J.B. NELSON Drennen 83* (UWO). **Screven Co.:** (1) 6 mi NE of Newington, 17 Apr 1948, *A. Cronquist 5004* (GH). **Sumter Co.:** (1) NW of Americus, 30 Jul 1901, *R. Harper 1143* (MO). **Talbot Co.:** (3) 2 km ENE of Geneva, 13 Aug 1993, *J.B. Phipps 6725* (UWO); 2 km ENE of Geneva, 13 Aug 1993, *J.B. Phipps 6727* (UWO); 2 km ENE of Geneva, 9 Apr 1991, *J.B. Phipps 6485* (UWO). **Tatnall Co.:** (1) 2 mi W of Reidsville, 3 Apr 1948, *A. Cronquist 4949* (US). **Worth Co.:** (1) 3.7 mi NNW of Sylvester, 21 Aug 1966, *W.R. Faircloth 4030* (NCU). **SOUTH CAROLINA. Jasper Co.:** (3) 1.2 mi NE of junction of Co. Route 462, 24 Sep 1969, *S.W. Leonard and A.E. Radford 2778* (MO, NCU); S of Cypress Creek, E of S-219 and S-17, W of Grays, 8 May 1984, *C.A. Aulbach-Smith and J.B. Nelson 3080* (USCH).

Crataegus florens Beadle
ALABAMA. Barbour Co.: (1) no locality, 11 Aug 1927, *K.M. Wiegand and W.E. Manning 1356* (HUH). **Covington Co.:** (1) 2 mi W of Andalusia on US 84, 15 May 1970, *R. Kral 38517* (FSU). **Dallas Co.:** (8) Rte. 140, Mt. Carmel Church, 8–10 mi E of Selma, 3 Oct 1998, *J.B. Phipps and R. Lance 7803* (UWO); Rte. 140, 8–10 mi E of Selma near abandoned church, 10 Apr 1998, *J.B. Phipps 7686* (UWO); Rte. 140, 8–10 mi E of Selma near abandoned church, 10 Apr 1998, *J.B. Phipps 7685* (UWO); Rte. 140, 8–10 mi E of Selma near abandoned church, 3 Oct 1998, *J.B. Phipps and R. Lance 7801* (UWO); Rte. 140, 8–10 mi E of Selma near abandoned church, 3 Oct 1998, *J.B. Phipps and R. Lance 7802* (UWO); Rte. 140, 4.5 mi E of Selma, 10 Apr 1998, *J.B. Phipps 7681* (2*UWO); S outskirts of Selma, 15 Oct 1984, *J.B. Phipps 5484* (UWO). **Lowndes Co.:** (1) NE of Whitehall Holy Ground Battlefield Memorial Park, 10 Apr 1998, *J.B. Phipps 7678* (UWO). **Montgomery Co.:** (1) Beziel Springs Church Rd. S of Alabama 24 near Jack Creek,

1 Oct 1998, *J.B. Phipps and R. Lance 7785* (UWO). **Sumter Co.:** (1) Old Bluffport off S.R. 28 about 7 mi due E of Livingston along wooded tracks about ¾ mi back from Tombigbee, 11 Apr 1998, *J.B. Phipps 7696* (UWO). **Lee Co.:** (1) no locality, 1 Aug 1902, *T.G. Harbison 6665* (NY). **FLORIDA. Gadsden Co.:** (1) Fla Rte. 269, 23 May 1982, *R.K. Godfrey 79896* (UWO). **Hamilton Co.:** (1) Withlacoochee River at Fla. Rte. 6, 1 Oct 1950, *H. Kurz s.n.* (FSU).**Holmes Co.:** (1) Ponce de Leon, 11 Sep 1950, *H. Kurz s.n.* (FSU). **Jefferson Co.:** (1) Monticello, 26 Mar 1981, *L.H. Lighthipe s.n.* (NY). **Leon Co.:** (1) no locality, 10 Jul 1940, *W.A. Murrill s.n.* (FLAS). **GEORGIA. Baker Co.:** (1) no locality, 22 Aug 1977, *R. Kral 60870* (VDB). **Houston Co.:** (1) Along hwy. 129 about 8.8 mi N of Pulaski Co. line 0.8 mi S of Big Indian Creek Crossing, 10 Apr 2001, *R. Lance 2126* (UWO). **Liberty Co.:** (1) About the Altamaha River Swamp, 18 Jun 1895, *J.K. Small s.n.* (NY). **Lincoln Co.:** (2) no locality, 2 Sep 1940, *W.H. Duncan 2832* (2*NCSC). **Lowndes Co.:** (1) Coastal Plain Province, 28 Jun 1965, *W.R. Faircloth 1902* (MO). **Macon Co.:** (2) Just E of Oglethorpe on W side of Flint River, 8 Oct 1939, *W.H. Duncan 1750* (2*NCU). **Richmond Co.:** (1) Augusta, 2 Aug 1902, *A. Cuthbert s.n.* (FLAS). **Sumter Co.:** (2) no locality, 4 Jun 1976, *R.A. Norris 2863* (IBE, NATC). **Taylor Co.:** (1) Coastal Plain Province, 16 May 1974, *W.R. Faircloth 7530* (NCU). **LOUISIANA. West Feliciana Parish:** (1) 10 Aug 1916, *R.S. Cocks 4022* (NO). **MISSISSIPPI. Rankin Co.:** (1) South end of Ross Barnet Reservoir, 13 Apr 1984, *J.B. Phipps 7709* (UWO). **NORTH CAROLINA. Carteret Co.:** (1) Beaufort, *s.n.* (UWO). **Greene Co.:** (1) Sand ridge ca ½ mi NE of Browntown, 22 Jun 1960, *H.E. Ahles and J. Haesloop 53705* (NCU). **Lenoir Co.:** (1) Rte. 903 few mi S of La Grange, dirt driveway W side of road N of turkey farm, 18 Apr 1993, *J.B. Phipps 6768* (UWO). **Wayne Co.:** (1) 2.5 mi W of Lenoir Co. line, 14 Jul 1949, *W.B. Fox 2665* (NCSC). **SOUTH CAROLINA. Aiken Co.:** (2) 5 Aug 1898, *H. Egert s.n.* (2*MO). **Chesterfield Co.:** (2) near McBee, 18 May 1934, *E.J. Palmer 42382* (HUH); Haw Ridge near McBee, 17 Jul 1933, *T.G. Harbison s.n.* (NCU). **Clarendon Co.:** (1) Coclough Pond, 15 Sep 1939, *R.K. Godfrey and R.M. Tryon 1461* (NYBG). **Kershaw Co.:** (1) no locality, 3 May 1923, 3 May 1923, *T.G. Harbison 7028* (HUH). **Lexington Co.:** (1) About 1 mi N o US 178 S of Swansea, 11 Sep 1939, *J.B. Phipps 6675* (UWO). **Richland Co.:** (1) no locality, 1 Jul 1908, *W.W. Ashe s.n.* (NCU).

Crataegus floridana Sarg.

FLORIDA. Alachua Co.: (3) Gainesville, 31 Jul 1940, *W.A. Murrill s.n.* (FLAS); Rte. 24 SW of Kanapaha and 0.4 km SW of SW127 St., 12 Aug 1993, *J.B. Phipps 6666* (UWO); Paynes Prairie Nature Reserve, 17 Aug 1993, *J.B. Phipps 6761* (UWO). **Baker Co.:** (2) Lake City, 2 Apr 1923, *T.G. Harbison 6062* (A); Lake City, 7 Apr 1920, *T.G Harbison 5654* (A). **Citrus Co.:** (1) Pineola, 3 Apr 1930, *F.S. Blanton 7000* (GA). **Clay Co.:** (3) Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5662* (A, NCU); High Land, 2 Jul 1929, *Hugh O'Neill s.n.* (FLAS). **Duval Co.:** (10) Jacksonville, March no year, *A.H. Curtiss 811* (CM, 2*GA, MO); Jacksonville, 25 Mar 1901, *A.H. Curtiss s.n.* (A); Jacksonville, 16 Jul no year, *A.H. Curtiss s.n.* (A); Jacksonville, 15 Aug 1901. *Biltmore Herb. 4076* (GH); Jacksonville, 17 Mar 1893, *A.H. Curtiss 4216* (MO); Jacksonville, 25 Mar 1902, *Bayutou s.n.* (FLAS); Jacksonville, *Biltmore Herb. 4067* (GH). **Gadsden Co.:** (2) Aspalaga, 5 Apr 1964, *S. McDaniel 4100* (IBE, FSU). **Gilchrist Co.:** (1) W of Newberry, 11 Jul 1940, *W.A. Murrill s.n.* (FLAS). **Hamilton Co.:** (2) 5.3 mi W of Jasper, 8 Jun 1950, *H. Kurz s.n.* (FSU); Floodplain Woods, 1 Oct 1950, *H. Kurz s.n.* (FSU). **Hernando Co.:** (1) Chinsegut Hill Wildlife Refuge, 3 Apr 1958, *G.R. Cooley and R. Eaton 5865* (FSU). **Levy Co.:** (1) near Chiefland, 7 Apr 1931, *J. Palmer 38435* (A). **Liberty Co.:** (1) Bristol, 7 Sep 1940, *W.B.Tisdale and W.A. Murrill s.n.* (FLAS). **Madison Co.:** (4) Ellaville, 3 Apr 1940, *W.A. Murrill and W.B. Tisdale s.n.* (FLAS); Cherrey Lake, 22 Aug 1940, *W.A. Murrill s.n.* (FLAS); 3.2 mi W of Co. line, 8 Apr 1961, *Barbara Moore 126* (FLAS); Ellaville, 21 Aug 1939, *W.A. Murill and W.B.Tisdale s.n.* (FLAS). **Marion Co.:** (3) Summerfield, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS); S of Juniper Creek, 1 Sep 1941, *W. H. Duncan 4158* (GA); 1 mi NNW of Dunellon W of US41 at the humpbacked bridge at Chatmar, 15 Aug 1993, *J.B. Phipps 6743* (UWO). **Putnam Co.:** (1) 1 mi N of Orange Springs, no date, *W.A. Murrill s.n.* (FLAS). **Suwanee Co.:** (2) Luraville, 9 Aug 1946, *West and Arnold s.n.* (FLAS); Between US hwy. 90 and railroad, 23 Mar 1977, *D.L. Martin 993A* (FLAS). **GEORGIA. Baker Co.:** (1) SW of Newton, 20 Aug 1941, *W.H. Duncan 4116* (GA). **Bibb Co.:** (1) 13 mi SW of Macon, 24 Oct 1967, *R.L. Lane 1637* (NCSC). **Brooks Co.:** (1) 6 mi SW of Hyattville, 14 Jul 1965, *R. Dean and W. Faircloth 2181* (NCU). **Chattahoochee Co.:** (1) NE of Cusseta along Liberty Hill Rd., 20 Sep 1999, *R. Lance s.n.* (UWO). **De Kalb Co.:** (2) Stone Mt. near Yellow River, 15 Aug 1899, *A.H. Curtiss 6520* (A, GH). **Dougherty Co.:** (1) no locality, 19 Sep 1909, *W.W. Eggleston 5119* (MO). **Elbert Co.:** (1) S of Bowman, 11 Apr 1977, *R. and D. Coile 472* (GA). **Jefferson Co.:** (1) 0.2 mi NE of Ogeechee River, 26 Jul 1967, *J.R. Bozeman and J. F. Logue 10777* (NCU). **Lee Co.:** (2) McGuire's Mill, 2 Aug 1895, *J.K. Small s.n.* (A); N of Starkesville bridge over Muckalee Creek, 11 May 1940, *W.H. Duncan 2347* (FLAS). **Mitchell Co.:** (2) 0.2 mi E of Flint River, 29 Jun 1966, *J. Bozeman 5217* (NCU); no locality, 23 Aug 1940, *R. McVaugh 5248* (GA). **Richmond Co.:** (1) Augusta, 16 Apr 1923, *T.G. Harbison 7006* (A). **Sumter Co.:** (4) 10 mi NE of Americus, 25 Sep 1939, *W.H. Duncan 1670* (GA, NCU); 10 mi NE of Americus, 25 Sep 1939, *W.H. Duncan 1671* (GA, NCU). **Talbot Co.:** (8) Rte. 96 about 1 mi E of Junction City, 14 Aug 1993, *J.B. Phipps 6714* (UWO); Rte. 96 about 1 mi E of Junction City, 13 Aug 1993, *J.B. Phipps 6715* (UWO); Rte. 96 about 1 mi E of Junction City, 13 Aug 1993, *J.B. Phipps 6716* (UWO); Rte. 96 about 1 mi E of Junction City, 9 Aug 1993, *J.B. Phipps 6492* (UWO); Rte. 96 about 1 mi E of Junction City, 9 Aug 1993, *J.B. Phipps 6495* (UWO); Rte. 96 about 1 mi E of Junction City, 13 Aug 1993, *J.B. Phipps 6717* (UWO); Rte. 96 about 1 mi E of Junction City, 13 Aug 1993, *J.B. Phipps 6719* (UWO); 2 km ENE Geneva, 13 Aug 1993, *J.B. Phipps 6723* (UWO). **Tatnall Co.:** (1) 2 mi W of Reidsville, 21 Aug 1940, *W.H. Duncan 2729* (GA). **Terrell Co.:** (1) 2 mi SE OF Parrot, 8 Oct 1939, *W.H. Duncan 1756* (NCU). **Toombs Co.:** (1) Vidalia, Apr 1914, *M. Huger s.n.* (A). **Webster. Co:** (1) 1.3 mi W of Kinchafoonee Creek, 27 Jul 1966, *J.R. Bozeman 6728* (NCU). **Wilcox Co.:** (2) N of Abbeville, 7 Jul 2007, *J.R. Bozeman 5518* (2*NCU). **NORTH CAROLINA. Brunswick Co.:** (1) Smith Island, 29 Jul 1965, *A.W. Cooper 2856* (NCSC). **SOUTH CAROLINA. Kershaw Co.:** (1) 6 mi S of Cawdenon, 17 Jul 1933, *T.G. Harbison and H.R. Totten s.n.* (NCU).

Crataegus furtiva Beadle
ALABAMA. Barbour Co.: (2) Eufaula NWR, 05 Aug 1994, *D. Drennen 99* (UWO); Hwy. 431 S at Nat Guard Armoury 4 mi N of Eufaula, 18 Aug 1993, *D. Drennen 88* (UWO). **Coffee Co.:** (1) 1 mi S jct. AL 87 and US 84, 08 Jun 1968, *R. Kral 31417* (UWO). **Dallas Co.:** (5) 2 mi E of Selma, 11 Apr 1900, *C.S. Sargent s.n.* (A); Selma, 12 Apr 1912, *T.G. Harbison 10842* (NCU); Rte. 140 Mt Carmel church 8–10 mi E of Selma, 03 Oct 1998, *J.B. Phipps and R. Lance 7796* (UWO); 140 Mt Carmel Church 8–10 mi E o Selma, 03 Oct 1998, *J.B. Phipps and R. Lance 7800* (UWO); Rte. 140 8–10 mi E of Selma, 03 Oct 1998, *J.B. Phipps and R. Lance 7799* (UWO). **?? Co.:** (1) no locality, 14 Apr 1902, *T.G. Harbison 4114* (NCU). **FLORIDA. Alachua Co.:** (1) NE Alachua, 10 Aug 1993, *J.B. Phipps 6756* (UWO). **Lafayette Co.:** (1) 6 mi W of Branford, 11 Jul 1940, *W.A. Murrill s.n.* (FLAS). **Lake Co.:** (2) W side of Fla 19, 23 Mar 1981, *D. Richardson, R.P. Wunderlin and B. Hausen 8134* (2*USF). **Leon Co.:** (2) W of Tallahassee, 17 Mar 1982, *R.K. Godfrey 79429* (IBE); 1.5 mi W of Miccosukee, 07 Aug 1951, *H. Kurz s.n.* (FSU). **Liberty Co.:** (2) Bristol, 16 Mar 1890, *GSS 18* (NCU); Torreya State Park Entrance, 17 May 1983, *R.K. Godfrey 80627* (FSU). **Marion Co.:** (1) Ocala, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS). **Sumter Co.:** (1) 3 mi S of Coleman, 02 Apr 1985, *B Hansen 10346* (USF). **Suwanee Co.:** (1) E of Suwanee River US 90, 28 Apr 1982, *R.K. Godfrey 79693* (UWO). **Wakulla Co.:** (1) St Marks, 25 Sep 1913, *T.G. Harbison 1209* (A). **GEORGIA. Ben Hill Co.:** (3) 1.5 mi S of Bowen Mill along US-129, 30 Jul 1964, *W.R. Faircloth 1433* (GA, MO, NCU). **Bibb Co.:** (3) 13 mi SW of Macon, 24 Oct 1967, *R.L. Lane 1637* (IBE); Bailey's Mill, 23 Apr 1898, *EF Andrews s.n.* (AUA); 10 Jun 1937, *AM Laessle s.n.* (GAM). **Burke Co.:** (3) River Rd at 18 km N of US 301, 19 Apr 1992, *J.B. Phipps 6569* (UWO); River Rd at 18 km N of US 301, 19 Apr 1992, *J.B. Phipps 6571* (UWO); River Rd at 18 km N of US 301, 12 Aug 1993, *J.B. Phipps 6701* (UWO). **Clarke Co.:** (2) Athens, 16 May 1925, *J.H. Miller* s.n. (GA); Athens, 16 Apr 1929, *K.M. Drewry E7783* (GA). **Colquitt Co.:** (1) 5 mi N of Doerum, 25 Aug 1990, *D. Drennen 24* (UWO). **Decatur Co.:** (4) 1 mi S of Faceville, 28 May 1983, *R.K. Godfrey 80661* (FSU); 4 mi N of Mt Pleasant Community, 31 Mar 1982, *R.K. Godfrey 79496* (FSU); 1 mi S of Faceville, 28 May 1983, *R.K. Godfrey 80662* (FSU); ¾ mi W of Brinson, 31 Mar 1982, *R.K. Godfrey 79498* (FSU). **Elbert Co.:** (1) S of Bowman, 11 Apr 1977, *N Coile 472* (NCSC). **Heard Co.:** (1) no locality, 29 May 1963, *J.C. Ware s.n.* (GA). **Gwinnett Co.:** (1) Mr. McGuire's Mill banks of Yellow road, 02 August 1895, *J.K. Small s.n.* (A). **Jefferson Co.:** (1) 1.2 mi S of Co. line along GA 17, 05 Aug 1966, *J.R. Bozeman 7071* (NCU). **Mitchell Co.:** (1) 3 mi SW of Hopeful, 23 Aug 1940, *R. McVaugh 5248* (A). **Richmond Co.:** (18) Augusta, 09 Apr 1919, *T.G. Harbison 43* (A); Augusta, 12 Apr 1901, *A. Cuthbert 402* (NCU); Augusta, 05 Apr 1914, *C.S. Sargent 520,* (2*A); Augusta, 31 Mar 1913, *T.G. Harbison 1038* (A); Augusta, 02 Apr 1900, *A. Cuthbert 4d* (NCU); Augusta, 10 Apr 1923, *W.W. Ashe s.n.* (NCU); Augusta, 15 Apr 1923, *T.G. Harbison 7002* (A); Augusta, 09 Apr 1919, *T.G. Harbison 51* (A); Augusta, 16 Apr 1923, *T.G. Harbison 7003* (A); Augusta, 07 Jul 1900, *A. Cuthbert 3* (DOV); Augusta, 31 Mar 1923, *T.G. Harbison 6058* (A); Augusta, 02 Apr 1913, *T.G. Harbison 1042* (A); Augusta, 09 Apr 1919, *T.G. Harbison 45* (A); no locality, 14 Aug 1958, *J.A. Duke 2025* (NCU); 10 mi E of Bath Rd, 14 Aug 1958, *J.A. Duke 2118* (NCU); Augusta, 04 Nov 1914, *T.G. Harbison 11* (A); Summerville near Augusta, 3 Oct 1914, *T.G. Harbison 1041* (A). **Meriwether Co.:** (1) 5 mi W of Greenville, 30 Apr 1961, *E.E. Terrell and A.S. Barclay 3414* (FSU). **Schley Co.:** (2) Ken Brown Conservation Easement 5 mi NW Ellaville, 01 Sep 1993, *D. Drennen 91* (UWO); Ken Brown Conservation Easement 5 mi NW Ellaville, 01 Sep 1993, *D. Drennen 92* (UWO). **Sumter Co.:** (1) Americus, Apr 1897, *A.W. Huger s.n.* (NY). **Talbot Co.:** (1) Rte. 96 1 mi E of Jct. City, 13 Aug 1993, *J.B. Phipps 6713* (UWO). **Tatnall Co.:** (1) 2 mi W of Reidsville, 03 Apr 1948, *A. Cronquist 4949* (GA). **Thomas Co.:** (1) Thomasville, Mar 1890, *Canby s.n.* (DOV). T**roup Co.:** (1) West Point, 12 Jun 1899, *s.n.* (NCU). **NORTH CAROLINA. Bladen Co.:** (1) Along big turnbull creek, 25 Aug 1993, *M. Lionel s.n.* (NCC). **Cumberland Co.:** (1) Steadman (across river), 20 Apr 1933, *T.G. Harbison and H.R. Totten s.n.* (NCU). **?? Co.:** (2) no locality, no date, *W.W. Ashe s.n.* (NCU); no locality, May 1938, *L. Hunt s.n.* (NCU). **SOUTH CAROLINA. Aiken Co.:** (7) near Windsor, 15 Apr 1932, *E.J. Palmer 39876* (A); 3 mi N of Aiken, 03 Apr 1939, *R.T. Clausen 3769* (A); Graniteville, 23 Apr 1899, *H. Eggert s.n.* (MO); near Windsor, 15 Apr 1932, *E.J. Palmer 39857* (A); 1.1 mi SW of Saluda-Aiken line, 11 Apr 1962, *H.E. Ahles and P.J. Crutchfield 56159* (NCU); 12–15 Sep 1909, *W.W. Eggleston 5064* (CM); US 278 ca 7 km E of jct. with SC 19, 03 Apr 1992, *J.B. Phipps 6574* (UWO). **Allendale Co.:** (4) 1 mi E of Martin, 11 Sep 1956, *C.R. Bell 5183* (GH, NCU, NY); no locality, 06 Apr 1953, *W.R. Kelley and W.T. Batson s.n.* (USCH). **Anderson Co.:** (3) 2.5 mi SE of Fair Play, 31 May 1956, *A.E. Radford 11992* (2*GA, NCU). **Barnwell Co.:** (2) Bowl State Park, 17 Oct 1956, *C.L. Porter 343* (USCH, UWO). **Calhoun Co.:** (1) 4.3 mi ENE of St Matthews, 14 Apr 1968, *S.W. Leonard 1264* (NCU). **Chesterfield Co.:** (1) US 1 and Co. 20 S of Cheraw, 16 May 1976, *J. Solomon 1951* (MO). **Clarendon Co.:** (1) no locality, 30 Jul 1982, *J.F. Logue 8L5635* (USCH). **Darlington Co.:** (2) Hartsville, 03 Jun 1941, *D.E. Smith 955* (NCU); 10 May1920, *A. Rehder 965* (A). **Edgefield Co.:** (1) 4.5 mi S of Trenton 01 Jun 1957, *A.E. Radford 26442* (NCU). **Kershaw Co.:** (4) 6 mi SW of Camden, 14 Jul 1933, *T.G. Harbison s.n.* (2*NCU); SW of Camden, 15 Jul 1933, *T.G. Harbison s.n.* (NCU); 6 mi SW of Camden, 17 Jul 1933, *T.G. Harbison s.n.* (NCU). **Lexington Co.:** (2) Bethel church, 13 Apr 1974, *D.E. Boufford 12808* (MO); 2 mi E of Edmund, 25 Apr 1980, *J.B. Nelson and W.T. Batson 1527* (FSU). **Richland Co.:** (2) E of Old Hartsville Guard, 05 Apr1991, *J.B. Nelson 10242* (USCH); 13.4 mi W of Camden, 14 Aug 1958, *H.E. Ahles and J.A. Duke s.n.* (NCU). **Sumter Co.:** (1) 5 mi WNW of Pinewood, 19 Apr 1957, *A.E. Radford 20984* (NCU). **?? Co.:** (1) Sandhills "A," 11 Jul 1952, *W.R. Kelley 419* (USCH).

Crataegus integra (Nash) Beadle
ALABAMA. Barbour Co.: (1) Lake Pt. State Park, 5 Jun 1992, *D.J. Drennan 00044* (UWO). **Calhoun Co.:** (1) Anniston Natural History Museum, 30 Aug 1998, *J.B. Phipps and D. Spaulding 7772* (UWO). **Dallas Co.:** (1) Rte. 140, 8–10 mi E of Selma, 10 Apr 1998, *J.B Phipps 7683* (UWO). **Macon Co.:** (1) 7.5 mi NE of Tuskegee, 20 Jul 1967, *Ross C. Clark 16456* (NCU). **Pike Co.:** (1) S of Brunridge, 17 Oct 1927, *W.W. Ashe s.n.* (NCU). **Tuscaloosa Co.:** (1) Jct. Kellytown Rd and Valley Rd, 23 Sep 1999, *J.B Phipps and*

R.J. O'Kennon 8071 (UWO). **FLORIDA. Alachua Co.:** (12) Hawthorn, 27 Feb 1933, *J.W. Kea s.n.* (FLAS); Gainesville, 7 Apr 1931, *E.J. Palmer 38416* (A); Gainesville, 25 Jul 1940, *Wilmot and W.A. Murrill s.n.* (FLAS, GA); Hawthorn, 4 Aug 1940, *Watson and W.A. Murrill s.n.* (FLAS); Gainesville, 6 Mar 1952, *G.R. Cooley 1443* (USF); Gainesville, 25 Sep 1940, *W.A. Murrill s.n.* (GA); Gainesville, 31 Mar 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 15 Jul 1936, *Survey Pasture s.n.* (FLAS); Gainesville, 17 Aug 1940, *W.A. Murrill s.n.* (FLAS); Gainesville, 12 Apr 1937, *W.A. Murrill s.n.* (FLAS); Paynes Prairie Nature Reserve, Chacala Trail, 21 Mar 1993, *J.B Phipps 6660* (UWO). **Baker Co.:** (2) near Macclenny, 24 May 1941, *W.A. Murrill s.n.* (GA); E side of Trail Bridge, 5 Jun 1936, *H.H. Hume s.n.* (FLAS). **Citrus Co.:** (4) 2 mi N of Pineola, 11 Mar 1956, *R. Kral 2069* (FLAS, FSU); Rose Hill, 21 Apr 1959, *G.R. Cooley 6460* (GH); 4 mi W of Hernando on SR486 at Anthony Ave., 15 Aug 1993, *J.B Phipps 6747* (UWO). **Clay Co.:** (2) Green Core Springs, 26 Jun 1940, *W.A. Murrill s.n.* (NCU); Green Core Springs, 26 Jun 1940, *J.R. Watson and W.A. Murrill s.n.* (NCU). **Columbia Co.:** (2) Lake City, 30 Jul 1927, *E. Manning 1350* (GH); 6 mi E of Branford, 1 Oct 1950, *H. Kurz s.n.* (FSU). **De Soto Co.:** (2) Old Pine Level Community Centre, 28 Aug 1976, *A.G. Shuey 1701* (2*USF). **Duval Co.:** (1) Jacksonville, 17 Mar 1893, *A.H. Curtiss 4216* (NY). **Escambia Co.:** (1) University of Fla. Grounds, 24 Jun 1983, *R.K. Godfrey 80734* (FSU). **Gadsden Co.:** (3) 6.8 mi E of Chattahoochee, 23 Apr 1967, *S. McDaniel 8757* (FLAS); 12 mi W of Quincy, 6 Sep 1940, *W.B. Tisdale and W.A. Murrill s.n.* (FLAS); 14 mi W of Quincy, 16 Sep 1940, *W.B. Tisdale and W.A. Murrill s.n.* (FLAS). **Hernando Co.:** (1) 6 mi N of Brooksville, 30 Jul 1961, *O. Lakela 24508* (USF). **Highlands Co.:** (4) Sebring, *J.B. McFarlin s.n.* (FLAS); Sebring, 9 Mar 1948, *R. Garrett s.n.* (GA); Sebring, 24 Jul 1949, *R. Garrett s.n.* (FLAS); NE of Sebring, 1 Aug 1948, *R. Garrett and L.E. Arnold 20* (FLAS). **Hillsborough Co.:** (5) 0.8 mi from Polk Co. line, 26 Mar 1961, *O. Lakela 23944* (FLAS, USF); Hillsborough River State Park, 3 May 1974, *S.M. Kreps s.n.* (USF); no locality, 3 Aug 1971, *O. Lakela 32161* (USF); Old Field, 13 Mar 1904, *A. Fredhold 6335* (GH). **Jackson Co.:** (3) Cottondale, 5 Apr 1923, *T.G. Harbison 6077* (A, NCU); N of Sneads, 10 Jun 1982, *R.K. Godfrey 79855* (UWO). **Lake Co.:** (10) no locality, 2 Apr 1978, *K. and J. Daubenmire 126* (USF); Eustis, 1–15 Jul 1894, *G. Nash 1142* (DOV, GH, MO); no locality, 28 Feb 1944, *F.W.H 17911* (GH); no locality, 13 Mar 1981, *R.P. Wunderlin 8880* (USF); Mt. Plymouth. 26 Nov 1960, *B. Moore s.n.* (FLAS); Leesburg, 17 Aug 1939, *Rude and W.A. Murrill s.n.* (FLAS); Eustis, 5 Aug 1901, *Biltmore Herb. 4022* (A); no locality, 14 May 1929, *W.W. Ashe s.n.* (NCU). **Leon Co.:** (2) E of Tallahassee, 23 Aug 1951, *H. Kurz s.n.* (FSU); 7 mi NW of Tallahassee, *W.A. Murrill s.n.* (FLAS). **Liberty Co.:** (2) Tallahassee, 6 Oct 1920, *T.G. Harbison 5711* (A); Tallahassee, 27 Aug 1902, *Biltmore Herb. 6043* (GH). **Madison Co.:** (3) Cherry Lake, 22 Aug 1940, *W.A. Murrill s.n.* (FLAS); Cherry Hill, 29 May 1942, *W.A. Murrill s.n.* (FLAS); near Ellaville, 5 Sep 1940, *W.B. Tisdale and W.A. Murrill s.n.* (FLAS). **Marion Co.:** (3) Summerfield, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS); near Orange Springs, 7 Jun 1984, *R.F. Thorne 57941* (USF); 1 mi S of Reddick, 15 Sep 1940, *W.A. Murrill s.n.* (GA). **Orange Co.:** (8) 1.5 mi W of McDonald, 24 Feb 1918, *C. Barker 476* (3*A); 1.5 mi W of McDonald, 24 Feb 1918, *C. Barker 475* (A); 2 mi E of Zellwood, 7 Jul 1918, *C. Baker 476* (A); near McDonald, 7 Jul 1918, *C. Baker 474* (A); E of Mt. Dora, 17 Aug 1939, *W.A. Murrill s.n.* (FLAS); 1.5 mi N of Plymouth, 23 Apr 1982, *B. Hansen and D. Richardson 9608* (USF). **Polk Co.:** (9) Frostproof, 16 Mar 1949, *R. Garrett s.n.* (FLAS); Haines City, 17 Mar 1931, *J. McFarlin 4511* (A); 15 mi N of Lakeland, 28 Mar 1964, *R. Wall 34* (USF); Lake Hamilton, 26 Sep 1962, *H.S. Conrad s.n.* (FLAS); no locality, no date 1919, *Grace K. Jennings 6346* (CM); no locality, Dec 1919, *Grace K. Jennings s.n.* (UWO); Lake Hamilton, 17 Mar 1931, *E.J. Palmer 4447* (A); Haines City, 17 Mar 1931, *J. McFarlin 4510* (A); 3 mi NNW of West Frostproof, N of Xeriscape Nursery, 15 Aug 1993, *J.B Phipps 6748* (UWO). **Putnam Co.:** (9) near Edgar, 10 Nov 1940, *Watson and W.A. Murrill s.n.* (FLAS); 5 mi S of Melrose, 29 Mar 1942, *W.A. Murrill s.n.* (FLAS); near Cowpen Lake, 10 Nov 1940, *W.A. Murrill s.n.* (GA); Johnson, 9 Jun 1940, *W.A. Murrill s.n.* (FLAS); 0.8 mi W of Putnam Hall, 11 Mar 1993, *J.B. Phipps 6650* (UWO); 2 mi N of SR100 on SR309, 11 Mar 1993, *J.B. Phipps 6649* (UWO); 3.1 mi E of Melrose, 8 Jun 1982, *S. Humphrey 126* (FLAS); Cowpen Lake, 4 Aug 1940, *W.A. Murrill s.n.* (A); N side Putnam Hall, 11 Mar 1993, *J.B Phipps 6651* (UWO). **Sumter Co.:** (2) St. Catherine's Island, 25 Aug 1916, *T.G. Harbison 12707* (NCU); 1.5 km NE of Center Hill, 10 Mar 1993, *J.B Phipps 6640* (UWO). **Suwanee Co.:** (3) Branford, 21 Aug 1939, *W.B. Tisdale and W.A. Murrill s.n.* (FLAS); Hildreth, 10 Jul 1940, *W.A. Murrill s.n.* (A); Between Branford and Hildreth, 17 Mar 1939, *Exploration Party 1939* (FLAS). **Wakulla Co.:** (3) Tiger Hammock, 13 Aug 1951, *H. Kurz s.n.* (FSU); SW of jct. US Rte. 198 Co. Rd. 365, 21 May 1983, *R.K. Godfrey 80641* (UWO); SW of jct. US98 and Co. Rd.365, 21 May 1983, *R.K Godfrey 80643* (UWO). **?? Co.:** (3) no locality, Jun 1894, *A.S. Hitchcock s.n.* (MO); no date, *S.B. Buckley s.n.* (MO); no date, *A.W. Chapman s.n.* (NY). **GEORGIA. Decatur Co.:** (1) 6 mi NE of Bainbridge, 15 Jul 1976, *R.A. Norris 3178* (IBE). **Dodge Co.:** (1) NE of Little Ocomulgee, 6 Jul 1966, *J.R. Bozeman 5412* (NCU). **Houston Co.:** (1) no locality, 1 Jun 1979, *D. Dixon 1398* (NATC). **Jefferson Co.:** (2) 7 mi SW of Wrens, 20 Jun 1941, *W. Duncan 3370* (GA, NCSC). **Liberty Co.:** (6) 10 mi E of Taylor's Creek, 19 Aug 1940, *W. Duncan 2713* (A, DHL, 3*GA, NCSC). **Lowndes Co.:** (1) 5.5 mi NW of Valdosta, 3 May 1973, *W. R. Faircloth 7254* (MO). **Montgomery Co.:** (1) no locality, 8 Jul 1966, *J. R. Bozeman 5745* (NCU). **Randolph Co.:** (1) Cuthbert, 29 Jul 1928, *W.W. Ashe s.n.* (NCU). **Richmond Co.:** (3) Augusta, 31 Mar 1923, *T.G. Harbison 6059* (A); Augusta, 11 Apr, *T.G. Harbison s.n.* (NCU); Augusta, 25 Jul 1900, *Biltmore Herb. 2779* (DOV). **Terrell Co.:** (1) Hwy. 82 W of Graves, 1 Jun 1992, *D.J. Drennan 00041* (UWO). **Wayne Co.:** (1) On Altamaha River, 26 Jul 1941, *W. H. Duncan 3749* (GA). **Webster Co.:** (1) Negro Church, no date, *s.n.* (NCU). **SOUTH CAROLINA. Aiken Co.:** (2) no locality, 1 Aug 1952, *W.R. Kelly 23* (USCH); no locality, no date 1910, *W.W. Ravenel s.n.* (GH). **Barnwell Co.:** (1) 2 mi out of Barnwell, 15 Jul 1933, *T.G. Harbison s.n.* (NCU). **Beaufort Co.:** (3) no locality, 25 Aug 1916, *T.G. Harbison s.n.* (A); no locality, 31 May 1930, *E.J. Palmer 5496* (A); Ladies Island, 30 Apr 1917, *C.F. Batchelder 4868* (GH). **Calhoun Co.:** (1) 4.3 mi ENE of St. Matthews, 3 Jul 1957, *H.E. Ahles 30299* (NCU). **Lexington Co.:** (3) near Lexington, 19 May 1964, *N.D. Butler 3* (USCH); 2.2 mi NE of Lynches River, 24 Aug 1958, *J.A. Duke 2258* (NCU); W side US321, 1.8 km S of I-26, 11 Aug 1993, *J.B Phipps 6673* (UWO). **Richland Co.:** (1) no locality, 29 Jun 1964, *J.R. Russell 22* (USCH).

Crataegus invicta Beadle
GEORGIA. Appling Co.: (1) N side Big Satilla Creek, 9 Jun 1967, *J.R. Bozeman 9242* (NCU). **Berrien Co.:** (1) 3.2 mi W of Nashville, 4 May 1968, *W.R. Faircloth 5122* (GA). **Brooks Co.:** (4) 5.5 mi NNW of Quitman, 1 Jul 1965, *W.R. Faircloth 2005* (FSU, MO, NCC); 3 mi E of Quitman, 27 Jun 1966, *J.R. Bozeman 4902* (NCU). **Colquitt Co.:** (1) 5.4 mi W of Funston, 21 May 1973, *T. McCarty s.n.* (MO). **Early Co.:** (2) Railroad Station Scaffold off US Rte. 84, 1 May 1982, *R.K. Godfrey 79713* (FLAS, FSU). **Lanier Co.:** (4) no locality, 2 May 1956, *R. Kral 2493* (FSU); 7.8 mi NNE of Lakeland, 50 yards S of Mud Creek, 18 Jul 1966, *W.R. Faircloth 3579* (GA, MO, NCC). **Wayne Co.:** (1) 1.3 mi N of Glynn Co. line E of Mt. Pleasant, 21 Jul 1966, *J.R. Bozeman 6205* (NCC). **SOUTH CAROLINA. Allendale Co.:** (2) 0.1 mi NNE jct. Co. Rte. 49 and 26 on Co. Rte. 49, 13 May 1956, *H.E. Ahles and C.R. Bell 12522* (NCU, SC).

Crataegus lacrimata Small
ALABAMA. Autauga Co.: (1) near Prattville, 10 Apr 1966, *A.C. Koelling s.n.* (AUA). **Baldwin Co.:** (2) no locality, 21 Mar 1888, *C. Mohr s.n.* (ALU); Sandhills, 14 Oct 1923, *W.W Ashe s.n.* (NCU). **Dale Co.:** (1) near W boundary of Dale Co., 15 Apr 1931, *E.J. Palmer 38645* (A). **Dallas Co.:** (2) Selma, 11 Apr 1912, *T.G. Harbison 10831* (NCU); Selma, 10 Apr 1912, *T.G Harbison s.n.* (A). **Pike Co.:** (4) 5 mi SE of Troy, 29 Sep 1979, *S. McDaniel and C. Duncan 22940* (TENN); 5 mi ESE of Troy, 28 or 29 Sep 1966, *S. McDaniel 7805* (FSU, VDB); On hwy. 19, ¼ mi E of hwy. 223, 11 Sep 1986, *A.R. Diamond 2881* (AUA). **Russell Co.:** (2) 1 mi N jct. US 931 on Ala 169, 22 Jul 1968, *R. Kral 31806* (GA, UWO). **FLORIDA. Alachua Co.:** (3) W side of Gainesville, 22 Mar 1968, *W.G. D'Arcy 2370* (UWO); Payne's Prairie, Gainesville, 10 Aug 1940, *W.A. Murrill s.n.* (FLAS); SW of Payne's Prairie, Gainesville, 21 Aug 1940, *W.A. Murrill s.n.* (FLAS). **Bay Co.:** (22) 2 mi W of Rte. 231 jct. with FL Rte. 20., N of Youngstown, 14 Mar 1982, *R.K. Godfrey 79413* (FSU); 2 mi W of Rte. 231 jct. with FL Rte. 20 by Rte. 20, N of Youngstown, 14 Mar 1982, *R.K. Godfrey 79412* (FSU); 2.5 mi W of jct. FL Rte. 20 and US Rte. 231 by Rte. 20, 02 Apr 1982, *R.K. Godfrey 79509* (10*FSU); 1 mi W of Calhoun-Bay line by FL Rte. 20, W of Clarksville, 14 Mar 1982, *R.K. Godfrey 19411* (FSU); 1 mi E of Econfina Creek by FL Rte. 20, 14 Mar 1982, *R.K. Godfrey 19414* (FSU); Street perpendicular to Pearl Ave. Panama City Beach, 06 Nov 1982, *R.K. Godfrey 80187* (FSU, UWO); 1.8 mi W of jct. of FL Rte. 20 and US Rte. 231 by Rte. 20, 02 Apr 1982, *R.K. Godfrey 79508* (UWO); 1.8 mi W of jct. of FL Rte. 20 and US Rte. 231 by Rte. 20, 02 Apr 1982, *R.K. Godfrey 79507* (2*FSU, UWO); 8 mi N of jct. Fla. 20 along Fla. 231 2 mi S of Jackson Co. line, 11 Apr 1966, *J. Beckner and W. D'Arcy 993* (FLAS); 0.1 mi W of jct. with Fla. 77 on Fla. 20, 01 May 1982, *R. Wunderlin and J. Beckner 9325* (USF). **Calhoun Co.:** (2) 16 mi W of Altha, 10 May 1964, *S. McDaniel 4431* (FSU, IBE). **Escambia Co.:** (14) North Pensacola, 12 Jul 1969, *R.K. Godfrey 68622* (FSU); Univ. W FL campus grounds, 24 Jun 1983, *R.K. Godfrey 80734* (6*FSU); no locality, 07 Apr 1900, *C.S. Sargent 7665* (NY); near Pensacola, 14 Apr 1889, *C.S. Sargent s.n.* (A); Pensacola, 07 Apr 1900, *C.S. Sargent s.n.* (A, GH); Pensacola, 14 Apr 1894, *T.G. Harbison s.n.* (A); In Pensacola, opposite Bayview Mem. Cemetary, 18 Mar 1982, *Wilhelm 9980* (USF); 13 mi W of eastern gate of reservation on Santa Rosa Island, 30 Mar 1967, *C. and S. Chapman 0455* (FLAS). **Hillsborough Co.:** (3) Northeast border of USF campus, 09 Sep 1960, *J. Ray Jr. 10226* (USF); USF Campus, 11 Mar 1961, *O. Lakela 23807* (USF); USF Campus, 02 Ag 1961, *O. Lakela 24519* (USF). **Holmes Co.:** (1) Choctawatchee River, W of Millers Crossroad by FL Rte. 2, 17 Mar 1982, *R.K. Godfrey 79423* (FSU). **Levy Co.:** (1) By US Rte. 19 between Gulf Hammock and Lebanon Station, 26 Mar 1983, *R.K. Godfrey 80362* (FSU). **Liberty Co.:** (1) Torreya State Park, 04 Jul 1972, *R.K. Godfrey 71510* (FSU). **Marion Co.:** (2) Dunnellon, 11 Aug 1940, *W.A. Murrill s.n.* (FLAS); About 1 mi NNW of Dunnellon W of US 41, 15 Aug 1993, *J.B. Phipps 6744* (UWO). **Okaloosa Co.:** (70) Valparaiso, 09 Aug 1928, *W.W. Ashe s.n.* (NCU); 4.8 km N of US Rte. 90, 27 May 1973, *D.E. Boufford and H.E. Ahles 9484* (A); 1 mi. N of Deerland, 02 Aug 1954, *E.S. Ford 3886* (FLAS); 2 mi. NW of US 90 on FL Rte. 4, 20 Aug 1950, *H Kurz s.n.* (2*FSU); Valparaiso, 23 Mar 1927, *W.W. Ashe s.n.* (5*NCU); 3 mi N of Fort Walton, 02 Apr 1966, *R. Kral 26149* (FSU, GA, TENN, UWO); near Shoal River on US Rte. 90 and E of town of Crestview, 27 May 1973, *D.E. Boufford and H.E. Ahles 9492* (A); N of Niceville along FL 85, 19 Jun 1956, *Mr. and Mrs. H.A. Davis 11604* (WVA); 2 mi W of Laurel Hill, 02 Aug 1961, *R.K. Godfrey 61299* (FSU); 200 yds N of Rd 220 ca. 8 mi NNE of Niceville, 24 Aug 1966, *D.B Ward and C. Chapman 5987* (FLAS); 3.5 mi SW of Laurel Hill, 02 Aug 1961, *R.K. Godfrey 61316* (FSU); near jct. of Eglin Rd. 238 and Eglin Rd. 40, W of head of Rogue Creek, 22 Jul 1977, *K.D. Perkins with J.B. Nelson 340* (FLAS); 0.4 mi E of Shoal River on US 90, 21 May 1976, *J.C. Solomon 5621* (FSU); along Rte. 90 about 1 mi E of Shoal River, 27 Jul 1981, *D.S. Correll and H.B 52224* (USF); Jct. of US Rte. 90 and Shoal River, then 3 mi N on dirt road NE of Crestview, 27 May no locality, no date 1973, *H.E. Ahles with D.E. Boufford 77031* (CM); 17 mi NW of Ft Walton Beach, 10 May1967, *D.B. Ward, C. Chapman and R.R. Smith 6396* (FLAS, LAF, NCU); S of Shoal River on FL Rte. 87, 04 Jun 1951, *H. Kurz s.n.* (FSU); Milligan, 05 Apr 1949, *S.C. Hood 1829* (FLAS); 1 mi N of Niceville Center by FL Rte. 85, 02 Apr 1982, *R.K. Godfrey 79518* (FSU, UWO); N side of US 90 about 8 km E of Crestview 0.5 km W 4 lane hwy., 08 Apr 1991, *J.B. Phipps 6476* (UWO); 2.5 mi E of Niceville by FL Rte. 20, 02 Apr 1982, *R.K. Godfrey 79517* (FSU, UWO); rest area on I10 ca. 1 mi E intersection with hwy. 85 S of Crestview, 23 May 1989, *L.E. Brown 13628* (UWO); 1 mi N of Niceville Center by FL Rte. 85, 02 Apr 1982, *R.K. Godfrey 79519* (FSU, UWO); 3.4 mi E of Holt by US Rte. 90, 02 Apr 1982, *R.K. Godfrey 79521* (FSU, UWO); near Deerland, 27 Apr 1956, *R.K. Godfrey 54630* (DUKE, FLAS, FSU, NCU, UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6736* (UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6739* (UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6738* (UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6737* (UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6740* (UWO); US 90, 6 mi E of Crestview, 14 Aug 1993, *J.B. Phipps 6735* (UWO); N side of US 90 about 8 km E of Crestview 0.5 km W of 4 lane hwy., 08 Apr 1991, *J.B. Phipps 6475* (UWO); Hwy. 4 just S of Baker and 2.9 km NW of Milligan at US 90, 14 Aug 1993, *J.B. Phipps 6734* (UWO); Hwy. 4 just S of Baker and 2.9 km at Richmond Rd. and 2.9 km NW of Milligan at US 90, 04 Apr 1991, *J.B. Phipps 6473* (UWO); Hwy. 4 just S of Baker and 2.9 km at Richmond Rd. and 2.9 km NW of Milligan at US 90, 04 Apr 1991, *J.B. Phipps 6474* (UWO); Crestview rest stop on I10 E, 12 Jun 1989, *D.J. Drennen 20* (UWO); 4.6 mi E of Holt by US Rte. 90, 02 Apr 1982, *R.K. Godfrey 79520* (FSU, UWO); Milligan, 05 Apr

1949, *S.C. Hood 1831* (FLAS); Rte. 85, 2 mi SW of Valparaiso, 04 Apr 1975, *L.J. Uttal 10996* (NCU); 3 mi N of Ft. Walton, 02 Apr 1966, *R. Kral 26149* (IBE); Niceville, 28 Mar 1951, *E.L. Tyson 537* (FLAS); Rest area beside I-10 1 mi E of Shoal, 29 Mar 1975, *L.L. Anderson 3922* (FSU); W side of Rte. 85 ½ mi NE of bridge over Garnier Bayou, 15 Mar 1982, *G. Wilhelm 9945* (USF); Valparaiso, 23 Mar, *T.G. Harbison s.n.* (NCU); 1 mi NE of Ft. Walton, 11 Sep 1950, *H. Kurz s.n.* (FSU); 3 mi E of Shalimar and S of Fla 85, *J. Beckner and W. D'Arcy 1119* (FLAS); Crestview, 08 Apr 1899, *C.S. Sargent s.n.* (A); Valparaiso, 27 Mar 1918, *W.W. Ashe s.n.* (NCU); Valparaiso, 26 Mar 192, *W.W. Ashe s.n.* (NCU); Tallahassee, 12 Jun 1950, *H Kurz s.n.* (FSU); W of Crestview, 20 Apr 1982, *H.B. and D.S. Correll 53779* (NCU). **Santa Rosa Co.:** (6) 17 mi E of Pensacola on US Rte. 98, 11 Aug 1950, *H Kurz s.n.* (FSU); Rte. 87, 8.5 km S of I10, E side of road, 08 Apr 1991, *J.B. Phipps 6472* (UWO); 1 mi W of Wynn Haven Beach by US 98, 04 Apr 1982, *R.K. Godfrey 79562* (FSU, UWO); FL 87 8.5 km S of I10 E side of road, 14 Aug 1993, *J.B. Phipps 6733* (UWO); FL 87 8.5 km S of I10 E side of road, 14 Aug 1993, *J.B. Phipps 6732* (UWO). **Volusia Co.:** (2) Haw Creek, Seville, 16 Jul, *A.H. Curtiss 6203* (2*A). **Walton Co.:** (14) 3 mi. S of Mossy Head jct., 19 Jul 1966, *C. Chapman and G. Crosby and R.R. Smith 1069* (FLAS); Along FL 285, 2.8 mi SW of jct. UC Rte. 90, 14 Sep 1970, *D.B. Ward and J. Hunter 7421* (FLAS); S of US 98 W of Grayton Beach, 13 Jul 1971, *H.A. Davis 15687* (FLAS); FL 280, 4 mi S of Mossy Head, 24 Aug 1966, *D.B. Ward and C. Chapman 5998* (FLAS); 7 mi W of DeFuniak springs N of hwy. 90, 10 Aug 1957, *E.S. Ford 5289* (FLAS); along FL 285 ca. 3 mi S of jct. with US 90 at Mossy Head, 29 Jun 1966, *J. Beckner, C. Chapman and R.R. Smith 1353* (FLAS); 1 mi E of Sandestin Beach by US Rte. 98, 04 Apr 1982, *R.K. Godfrey 79563* (2*UWO); DeFuniak Springs, 14 Apr 1899, *T.G. Harbison s.n* (A); DeFuniak Springs, 14 Apr 1931, *E.J. Palmer 38619* (A, GH); near DeFuniak Springs, 14 Apr 1931, *E.J. Palmer 38617* (A, MO); 6.5 mi W of Portland, 11 Aug 1966, *C. Chapman 1258* (FLAS). **Washington Co.:** (3) on Orange Hill W of FL 273 and ca. 7 mi SE of Chipley, 16 Oct 1972, *D.B. Ward and N.E. Lee and A. Gholson s.n.*(FLAS); S of Chipley, West FL, 26 Mar 1928, *W.W. Ashe s.n.* (NCU); Holmes Valley, 26 Mar 1928, *W.W. Ashe s.n.* (NCU). **?? Co.:** (2) Nat. Forest near Wild Cat lookout trail, 26 Mar 1927, *W.W. Ashe s.n.* (NCU); Florida National Forest, 26 Mar 1927, *W.W. Ashe s.n.* (NCU). **GEORGIA. Chattahoochee Co.:** (1) Ft. Benning Military Res., 16 mi SE of Columbus, 03 Apr 1980, *R.R. Haynes 7665* (ALU). **Cherokee Co.:** (1) Canton Rd 140, RR3, Box 1180, 19 Apr 1984, *F.G. Meyer and P.M. Mazzeo 20064* (UWO). **Clarke Co.:** (1) near River by Bobbin Mill, 08 Apr 1930, *J.M. Reade E4634* (UWO). **Lanier Co.:** (1) 2.3 mi SSE of Lakeland, 26 Oct 1968, *G. Lloyd, N. Gillis and W.R. Faircloth 5653* (GA). **Lowndes Co.:** (1) 10 mi WSW Valdosta, 30 Aug 1968, *R.A. Norris 1051* (IBE). **Madison Co.:** (1) Danielsville 2 mi NE, 19 Aug 1927, *K.M. Wiegand and W.E. Manning 1357* (GH). **Randolph Co.:** (1) Cuthbert, 09 Sep 1928, *T.G. Harbison s.n.* (NCU). **Talbot Co.:** (4) Rte. 96, about 1 mi E of Junction City, 13 Aug 1993, *J.B. Phipps 6712* (UWO); Rte. 96, about 2 km ENE of Geneva, 09 Apr 1991, *J.B. Phipps 6488* (2*UWO); 2 km ENE of Geneva, 13 Aug 1993, *J.B. Phipps 6720* (UWO). **SOUTH CAROLINA. Aiken Co.:** (3) S.C. 391 11.2 mi S of Batesburg, 18 Jul 1958, *J.A. Duke 1512* (NCU); Woodlanders Nursery, 1128 Colleton Ave, 11 Apr 1984, *F.G. Meyer and P.M. Mazzeo 19864* (UWO); 1 mi E of Wagener, 24 Dec 1941, *W.C. Coker s.n.* (NCU). **Lexington Co.:** (1) Batesburg, 29 Apr 1911, *E.A. McGregor 609* (US). **Orangeburg Co.:** (1) 5 mi W of Orangeburg on US Rte. 301, 26 Sep 1957, *H.E. Ahles 35077* (NCU).

Crataegus lanata Beadle

ALABAMA. Barbour Co.: (2) Eufaula NWR at entrance of old hwy. 165, 06 Apr 1993, *D.J. Drennen 79* (UWO); Eufaula NWR at Baker Co. line, N boundary on old hwy. 165, 30 yrds E of fireline, 19 August 1993, *D.J. Drennen 90* (UWO). **Dallas Co.:** (3) Sardis, 20 Apr 1916, *R.S. Cocks s.n.* (NO); Sardis, 15 Apr 1918, *R.S. Cocks s.n.* (NO); Selma, 12 Apr 1912, *T.G. Harbison 842* (HUH). **Greene Co.:** (1) Entrance to Smith Lake, 14 Apr 1967, *T.D Naugle T995* (ALU). **Lee Co.:** (1) Phoenix City, 28 Sep 1906, *T.G. Harbison 10045* (NCU). **Russell Co.:** (2) Phoenix City, 26 Sep 1905, *T.G. Harbison 10044* (2*NCU). **Tuscaloosa Co.:** (1) Tuscaloosa, 05 Apr 1927, *W.W. Ashe s.n.* (NCC). **FLORIDA. Citrus Co.:** (11) 4.5 mi NE of Holder, 3 May 1981, *L. Baltzell and D.W. Hall 11387* (2*FLA, FLAS, WILLI); Withlacoochee State Forest, 27 May 1973, *P. Genelle and G. Fleming 1883* (GA, NCU, TENN, USF); Flora City, 19 Apr 1931, *E.J. Palmer 38393* (HUH); Pineola, 03 Apr 1930, *F.S. Blanton 7000* (2*HUH). **Columbia Co.:** (2) no locality, 21 Jul 1918, *T.G. Harbison s.n.* (HUH); Lake City, 21 Jul 1918, *T.G. Harbison 14576* (NCU). **Hernando Co.:** (4) Chinesgut Hill Wildlife Refuge, 03 Apr 1958, *G.R. Cooley and R.J. Eaton 5865* (USF); 0.7 mi S of Nobleton, 17 Jun 1976, *L. Baltzell and D.B. Ward 8620* (FLAS); 4 mi NE of Brooksville, 18 May 1965, *J. Beckner and D.B. Ward 4694* (FLAS, WILLI). **Jackson Co.:** (2) 1.4 mi W of Sneads, 19 May 1966, *R.K. Godfrey 67637* (FLAS, FSU). **Lake Co.:** (1) Vacant lot in Tavares, 15 May 2000, *A.H. Curtiss 6617* (DOV). **Liberty Co.:** (2) Telogia, 23 Jul 1940, *Arnold and West s.n.* (FLAS); Rock Bluff, 06 Aug 1927, *K.M. Wiegand and W.E. Manning 1355* (HUH). **Marion Co.:** (1) Summerfield, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS). **Sumter Co.:** (1) Sumterville, 04 Apr 1946, *Arnold and West s.n.* (FLAS). **Suwanee Co.:** (1) Hildreth, 10 Jul 1940, *W.A. Murrill s.n.* (FLAS). **Washington Co.:** (1) 1 mi W of Miller's Ferry, 03 Apr 1958, *R.K. Godfrey 56374* (FSU). **Volusia Co.:** (1) Low woods bordering Haw Creek, 07 Jun 1900, *A.H. Curtiss 6677* (GA). **GEORGIA. Baldwin Co.:** (1) 5.3 km S of Co. line on US 441, 01 Jun 1973, *H.E. Ahles and D.E. Boufford 9693* (A). **Chattooga Co.:** (1) Summerville near Augusta, 03 Sep 1914, *T.G. Harbison 2=1041* (HUH). **De Kalb Co.:** (1) Bordering Yellow River near Stone Mt., 15 Aug 1899, *A.H. Curtiss 6520* (MO). **Gadsen Co.:** (1) 1 mi S of River Jct., 06 Sep 1940, *W.A. Murrill and W.B. Tisdale s.n.* (FLAS). **Gwinett Co.:** (8) McGuire's Mills, 11 Sep 1902, *Biltmore Herb. 7105* (2*GH); On the Yellow River near McGuire's Mills, 17 May 1895, *J.K. Small s.n.* (NY); Yellow River, 11 Sep 1902, *C.D.Beadle 7105* (Gray, HUH); Rocky woods near Stone Mt., 15 Aug 1899, *A.H. Curtiss 6519* (DOV, HUH); Rocky woods bordering Yellow River near Stone Mt., 15 Aug 1899, *A.H. Curtiss 6520* (MO). **Hart Co.:** (1) 5 mi SW of Hartwell, 20 May 1934, *E.J. Palmer 42445* (HUH). **Lee Co.:** (1) 3 mi SE of Smithville, 11 May 1940, *W.H. Duncan 2306* (GAM). **Lincoln Co.:** (1) 3 mi W of Liston, 02 Sep 1940, *W.H. Duncan 2832* (DUKE). **Long Co.:** (1) 0.5 mi N of Beard's Bluff, 10 Apr 1963, *J.R.Bozeman 2534* (NCU). **Lowndes Co.:** (3) 10.3 mi S of Valdosta, 28 Jun 1965, *W.R. Faircloth 1902* (2*GA, NCU). **Madison Co.:** (1) 2 mi W of Comer on S fork of the Broad River, 26 Apr 1942, *W.K. Duncan 4781* (GA). **Richmond Co.:** (9) 1.5 mi E of GA-56, 04 Aug 1966, *J. R. Bozeman 6952* (2*NCU); Summerville near Augusta, 3 Oct 1914, *T.G. Harbison 1041* (A); Augusta, *S.T. Olney and J. Metcalfe s.n.* (HUH); Augusta,

S.T. Olney and J. Metcalfe 29 (NCSC); Augusta sandhills, 08 Jul 1900, *A. Cuthbert 3* (NCU); Augusta, 14 Aug 1902, *A. Cuthbert s.n.* (2*FLAS); Augusta, 09 Apr 1919, *T.G. Harbison s.n.* (HUH). **Tatnall Co.:** (1) NE of Altamaha river, 12 Jul 1966, *J.R. Bozeman 5967* (NCU). **Wilkinson Co.:** (1) 5.3 km S of Baldwin Co.line on US Rte. 441, 01 Jun 1973, *D.E. Boufford and H.E. Ahles 9693* (HUH). **NORTH CAROLINA. Brunswick Co.:** (1) N of Southport, Pineland, 24 Apr 1935, *A.C. Matthews s.n.* (DUKE). **Cumberland Co.:** (1) near Stedman, *T.G. Harbison s.n.* (NCU). **New Hanover Co.:** (3) Carolina Beach, 14 May 1937, *Mills and Shrink s.n.* (NCSC); Mill Pond, Wilmington, 28 Jun 1905, *J.M. Macfarlane and O. Goenz s.n.* (DUKE); Cape Fear Peninsula, 28 Jul 1949, *W.B. Fox 2820* (NCSC). **Sampson Co.:** (1) near Stedman across the river, 28 Apr 1933, *T.G. Harbison and J.R. Totten s.n.* (NCU). **?? Co.:** (1) Western North Carolina, 23 May 1901, *W.W. Ashe 1949* (CM). **SOUTH CAROLINA. Aiken Co.:** (1) US 278 about 2 km E of jct. with bush 3 m tall, 29 Apr 1992, *J.B. Phipps 6573* (UWO). **Chesterfield Co.:** (1) Haw Ridge near McBee, 17 Jun 1933, *T.G. Harbison and H.R. Totten s.n.* (NCU). **Kershaw Co.:** (6) Camden, 12 May 1902, *T.G. Harbison 6124* (HUH); Hartsville, 07 Apr 1935, *BE Smith 219* (USCH); no locality, 18 May 1934, *E.J. Palmer 42393* (SC); near Camden, 19 Apr 1932, *E.J. Palmer 39953* (HUH); 4 mi W of Bethune, 07 Sep 1939, *R.K. Godfrey 8021* (GH, NY). **Lancaster Co.:** (1) 0.4 mi NE of little Lynches Creek, 06 Jun 1957, *J.G. Haesloop 27422* (NCU). **Newberry Co.:** (2) Billy Dreher Island, 18 Aug 1971, *L.H. Buff 410* (FLAS, USCH). **Oconee Co.:** (2) 4 mi NW of Walhalla, 04 May 1956, *H.E. Ahles and Bell 13923* (NCU); no locality, 30 Apr 1926, *T.G. Harbison 8008* (HUH). **Richland Co.:** (1) Between 6th Division Rd. and Wildcat Rd, 27 May 1992, *J.B. Nelson and B.S. Long 12594* (USCH). **Sumter Co.:** (1) no locality, 13 Jun 1993, *J.B. Nelson 14225* (USCH). **VIRGINIA. Chesterfield Co.:** (1) Cambridge, 5 Aug 1845, *R. Gray s.n.* (GH).

Crataegus lancei J.B. Phipps
ALABAMA. Barbour Co.: (1) Eufaula NWR, 15 Oct 1993, ***D. Drennan 95*** (UWO). **Clayton Co.:** (1) no locality, 20 Oct 1930, ***E.J. Palmer 5658*** (A). **Greene Co.:** (1) Smith Lake area, 14 Apr 1969, ***J. Thomas 1975*** (NCU). **FLORIDA. Alachua Co.:** (1) W of Gainesville, 20 Aug 1940, ***W.A. Murrill s.n.*** (GA). **Clay Co.:** (1) Hibernia, Mar 1869, ***W.M. Canby 1278*** (CM). **GEORGIA. Burke Co.:** (1) River Road, 18 km N of US 301, 12 Aug 1993, ***J.B. Phipps 6692*** (UWO). **Dougherty Co.:** (1) Albany, 18–19 Sep 1909, ***W.W. Eggleston 5118*** (MO). **Habersham Co.:** (2) Tallulah and Taccoa Falls, 8 Aug 1893, ***J.K. Small s.n.*** (GH, NY). **Richmond Co.:** (1) Augusta, sand bar ferry, no date, ***A. Cuthbert s.n.*** (FLAS). **NORTH CAROLINA. Brunswick Co.:** (1) Southport, 24 Apr 1935, ***A.C. Matthews s.n.*** (NCU). **Buncombe Co.:** (2) NW of Weaverville, 3 May 1999, ***R. Lance s.n.*** (UWO); New Stock Road and Alpine Meadows, 21 Oct 1998, ***R. Lance 98-51*** (UWO). **Mecklenburg Co.:** (1) Charlotte, no date, ***W.W. Ashe s.n.*** (NCU). **Moore Co.:** (1) Drowning Oak, 8 May 1975, ***J.F. Matthews, E. Edwards & T.P. Huntley s.n.*** (NCU). **Macon Co.:** (1) Franklin, 27 Apr no year, ***T.G. Harbison 520*** (A). **SOUTH CAROLINA. Chesterfield Co.:** (1) Haw Ridge, 22 Sep 1933, ***T.G. Harbison s.n.*** (NCU). **Kershaw Co.:** (1) SE side of US 1, 8 km S of Bethune, 11 Aug 1993, ***J.B. Phipps 6672*** (UWO). **Oconee Co.:** (1) Walhalla, 30 Apr 1926, ***T.G. Harbison 16481*** (NCU). **Richland Co.:** (1) near Ft. Jackson, 20 Jun 1958, ***J.A. Duke 1342*** (NCU).

Crataegus lassa Beadle
ALABAMA. Barbour Co.: (6) Eufaula NWR, 6 Apr 1993, *D.J. Drennan 81* (UWO); Eufaula NWR, 15 Apr 1992, *D.J. Drennan 00042* (UWO); Eufaula NWR, 19 Aug 1993, *D.J. Drennan 89* (UWO); Eufaula NWR, 3 Aug 1992, *D.J. Drennan 00059* (UWO); Lake Point State Park, 2 Jun 1989, *D.J. Drennan 00018* (UWO); Eufaula NWR, 15 Apr 1992, *D.J. Drennan 00053* (UWO). **Dallas Co.:** (18) Selma, no date, *T.G. Harbison s.n.* (NCU); near Selma, 19 Apr 1920, *T.G. Harbison s.n.* (NCU); Selma, 15 Apr 1970, *R. Kral 38586* (IBE, FSU, WILLI); Selma, 11 Apr 1912, *T.G. Harbison 10836* (2*NCU); Selma, 11 Apr 1913, *T.G. Harbison 836* (A); Selma, 19 Apr 1915, *T.G. Harbison s.n.* (A); Selma, 12 Apr 1912, *T.G. Harbison 843* (A); Selma, 9 Apr 1920, *T.G. Harbison 15728* (NCU); E side of 80 outskirts of Selma, 6 Apr 1984, *J.B. Phipps and T.C. Wells 5324* (2*UWO); E side of 80 outskirts of Selma, 6 Apr 1984, *J.B. Phipps 5326* (UWO); E side of 80 outskirts of Selma, 6 Apr 1984, *J.B. Phipps 5327* (UWO); E side of 80 outskirts of Selma, 6 Apr 1984, *J.B. Phipps 5329* (UWO); Outskirts of Selma, jct. US3O & AL 41, 7 Apr 1991, *J.B. Phipps 6471* (UWO); Rte. 140 8–10 mi E of Selma, 10 Apr 1998, *J.B. Phipps 7684* (UWO). **Macon Co.:** (3) no locality, 18 Jul 1967, *James Wright s.n.* (AUA); Tuskegee National Forest, 11 Apr 1976, *A.H. Sessler 016* (AUA, UWO). **Pike Co.:** (1) 5 mi SE of Troy, 28 Jun 1970, *R. Kral 39798* (UWO). **Russell Co.:** (1) Rte. 431 SW of Phoenix City 2.9 km SW of Russell Co. Rd 41, 8 Apr 1991, *J.B. Phipps 6479* (UWO). **FLORIDA. Alachua Co.:** (2) March, *A.H. Curtiss 811* (GA); Paynes Prairie Nature Reserve, Chacala Trail, 17 Aug 1993, *J.B. Phipps 6760* (UWO). **Citrus Co.:** (2) Citrus Springs, NW corner Athens Dr. and Sherman Dr.,15 Aug 1993, *J.B. Phipps 6745* (UWO); E side of US 41, 3 mi N of Hernando, 15 Aug 1993, *J.B. Phipps 6746* (UWO). **Gadsden Co.:** (3) Aspalaga, 5 Apr 1964, *Sidney McDaniel 4101* (IBE, FSU); 3 mi S of River Junction, 6 Aug 1927, *W.E. Manning and K.M. Wiegand 1353* (GH). **Leon Co.:** (2) Tallahassee, Sep 1901, *Biltmore Herb. 4947* (A); Tallahassee, Apr 1901, *Biltmore Herb. 4051* (A). **GEORGIA. Burke Co.:** (1) River Rd. A, 18 km N of US 301, 19 Apr 1992, *J.B. Phipps 6567* (UWO). **Columbia Co.:** (3) US 278, 4.5 km N Camp Gordon, 13 Aug 1993, *J.B. Phipps 6702* (UWO); US 278, 4.5 km N Camp Gordon, 13 Aug 1993, *J.B. Phipps 6703* (UWO); US 278, 4.5 km N Camp Gordon, 13 Aug 1993, *J.B. Phipps 6704* (UWO). **Randolph Co.:** (1) Cuthbert, 29 Mar 1918, *T.G. Harbison s.n.* (A). **Richmond Co.:** (5) Augusta, 16 Apr 1923, *T.G. Harbison 7005* (2*A); Augusta, Jul, *A. Cuthbert 107* (FLAS); Augusta, 9 Apr 1919, *T.G. Harbison 48* (A); Spur 56 5 km in, 18 Apr 1992, *J.B. Phipps 6558* (UWO). **Talbot Co.:** (5) Rte. 96 2 km E of Geneva, 9 Apr 1991, *J.B. Phipps 6484* (UWO); Rte. 96 2 km E of Geneva, 9 Apr 1991, *J.B. Phipps 6486* (UWO); Rte. 96 1 mi E of Junction City, 9 Apr 1991, *J.B. Phipps 6494* (UWO); Rte. 96 2 km E of Geneva, 9 Apr 1991, *J.B. Phipps 6481* (2*UWO). **Taylor Co.:** (1) 3 mi S of Junction City, 15 Apr 1978, *Mary P. Grant 078* (AUA). **SOUTH CAROLINA. Aiken Co.:** (1) Hwy. 4, 7 km E of junction w. Rte. 394, 16 Apr 1991, *J.B. Phipps 6513* (UWO). **Calhoun Co.:** (2) 4.3 mi ENE of St. Mathews, 14 Apr 1968, *S.W. Leonard 1264* (NCU, TC). **Lexington Co.:** (2) US 178, 4 km E of jct. SC113, 20 Apr 1992, *J.B. Phipps 6579* (UWO); Rte. 302 Clay Hill, 10 Apr 1991, *J.B. Phipps 6503* (UWO).

Crataegus lepida Beadle
FLORIDA. Alachua Co.: (1) 1 mi W of Fla. ??, 04 Apr 1981, *K.E. Woeste 3* (WILLI). **Citrus Co.:** (1) About 1.5 mi W of US 98, Aug 1995, *S. Riefler s.n.* (UWO). **Clay Co.:** (1) Middleburg, 26 Jun 1940, *W.A. Murrill and Bratley s.n.* (FLAS). **Highlands Co.:** (16) 4 mi N Lake Placid, 28 Feb 1961, *E.J. Palmer 10400* (USF); 3 mi N Lake Placid, 25 Apr 1960, *H.A. Gleason and R.J. Eaton 9757* (2*USF); 4 mi N Lake Placid, 07 Oct 1960, *J.D.Ray, O. Lakela and J. Patman 10400* (FLAS, FSU, USF); E of Sebring 2.8 mi from jct. with 17 at Sebring, 11 Sep 1987, *J.D. Skean and W.S. Judd and P. Alcorn 2132* (UWO); Sebring, 23 Apr 1964, *L.J. Brass 33210* (FLAS); US 17 jct. N of RR near jct. of Lake Letta Rd, 9 May 1982, *J. Eckner 2574* (USF); N of Lake Placid, 29 Sep 1079, *W.S. Judd with D.B. Ward and B. Judd 2504* (FLAS, FSU); Lakemont, 5 Sep 1981, *R.P. Wunderlin and J. Beckner 9127* (USF); Josephine Creek, 5 Oct 1960, *L.J. Brass 15319* (FLAS); Avon Park, 10 Apr 1948, *R. Garrett 171* (FLAS); S of Polk Co. Line, 3 Jun 1961, *O. Lakela 24226* (USF); Sebring, 5 Sep 1934, *J.K. Small and E. West s.n.* (FLAS). **Hillsborough Co.:** (2) 1.4 mi SE of centre of Sebring, 09 Mar 1993, *J.B. Phipps 6631* (UWO); 1.4 mi SE of centre of Sebring, 15 Aug 1993, *J.B. Phipps 6749* (UWO). **Osceola Co.:** (4) 5 mi NW of Loughman, 14 Oct 1960, *J.D. Ray, O. Lakela and J. Putman 10456* (FLAS, 2*USF); Kissimmee, 9 Apr 1938, *M.L. Singletory s.n.* (DUKE). **Polk Co.:** (4) At Greenlefe Resort, 21 Jun 1979, *D. Richardson and B. Hansen 5752* (USF); 3 mi E of Lake Hamilton, 10 Aug 1963, *H.S. Conard s.n.* (FLAS); Vicinity of Great Masterpiece Lake, Wales, 28 Jul 1962, *O. Lakela 25203* (USF); Marion Creek, 9 Sep 1931, *J.B. McFarlane 6643* (USF).**GEORGIA. Liberty Co.:** (2) 4 mi SW of Hinesville, 22 Jul 1927, *K.M. Wiegand and W.E. Manning 1348* (GH); 10 mi N of Hinesville, 18 Apr 1954, *W. Duncan 17804* (GA). **Pierce Co.:** (1) Blackshear, 28 Jun 1901, *A.H. Curtiss 6824* (DOV). **Screven Co.:** (2) Rte. 24, 12 mi S of US 301, 12 Aug 1993, *J.B. Phipps 6691* (UWO); Rte. 24, 12 mi S of US 301, 12 Aug 1993, *J.B. Phipps 6692* (UWO). **Tatnall Co.:** (1) no locality, 12 Jul 1966, *J.R. Bozeman 6001* (NCU). **?? Co.:** (1) no locality, no date, *H Corey s.n.* (NY). **LOUISIANA. Richland Parish:** (1) S of start of woods E of cemetery and LA 133 and N of I-20 Sec 4 and 9, 11 Apr 1978, *R.D. Thomas and N. Dawson 57507 and 1087* (NCU). **SOUTH CAROLINA. Colleton Co.:** (1) 0.7 mi SE jct. Co. 172 and 28, 05 Sep 1956, *H.E. Ahles and C.R. Bell 17918* (NCU). **Lexington Co.:** (1) 4 mi W of Lexington, 09 Apr 1985, *J. Seto, E. Tuggle, R. Wayson and C. Smith-Aulback s.n.* (USCH).

Crataegus munda Beadle
ALABAMA. Baldwin Co.: (5) Gateswood, 02 May 1903, *S.M. Tracy 8698* (GH, MSC, NCU, 2*US). **Conecuh Co.:** (1) S of Evergreen, 15 Oct 1923, *W.W. Ashe s.n.* (NCC). **Covington Co.:** (1) 19 mi N of Florala on US 331, 27 Apr 1969, *R. Kral 34546* (GA). **Cullman Co.:** (1) St. Bernard, 11 May 1934, *W. Wolf s.n.* (NO). **De Kalb Co.:** (1) E side of Rock Creek about ½ mi from mouth, 25 Sep 1948, *R.M. Harper 4096* (ALU). **Escambia Co.:** (1) Co. Rd 18 0.5 mi N of jct. with US 31-29, 07 Apr 1967, *R.L. Clark 10017* (NCU). **Etowah Co.:** (2) Gadsdale, 29 Jul 1900, *W.R. Maxon and C.L. Pollard 345* (A, GA). **Troy Co.:** (1) no locality, 2 Jul 1880, *C. Mohr s.n.* (ALU). **?? Co.:** (1) St. Bernard, 01 May 1910, *W. Wolf s.n.* (ALU). **FLORIDA. Alachua Co.:** (3) near Gainesville, 06 May 1940, *W.A. Murrill s.n.* (GA); no locality, 15 Apr 1930, *Loucks and West s.n.* (FLAS); E side of Gainesville, 11 Feb 1937, *West and Arnold s.n.* (FLAS). **Brevard Co.:** (1) Rockledge, 14 May 1897, *J. Crawford s.n.* (DUKE). **Citrus Co.:** (2) Crystal River, 24 Jun 1941, *L.E. Arnold and E. West s.n.* (FLAS); Orlando, S Riefler Nursery, 28 Apr 1996, *S. Riefler s.n.* (UWO). **Columbia Co.:** (1) Lake City, 01 May 1893, *Layne s.n.* (FLAS). **Escambia Co.:** (2) 5 mi W of Century, 08 Aug 1954, *E.S. Ford 42576* (FLAS); 3.5 mi W of Barnett Crossroads and 1 mi W of Big Escambia Creek, 08 Jul 1981, *G. Wilhelm 9212* (USF). **Gadsden Co.:** (2) Aspalaga, Apr no year, *300c* (GH, US). **Highlands Co.:** (1) N of Lake Placid near jct. of US Rte. 27 and Josephine Creek, 29 Sep 1979, *B. Judd, D.B. Ward and WS Judd 2504* (UWO). **Jackson Co.:** (2) 1.6 mi N of Marianna, 28 May 1973, *D. Boufford and H.E. Ahles 77051* (LSU); 1.5 mi N of Marianna, 27 May 1973, *D. Boufford and H.E. Ahles 9511* (A). **Leon Co.:** (1) Tallahasse, Apr 1843, *M. Rugel s.n.* (NY). **Liberty Co.:** (2) By FL Rte. 12, jct. with FL Rte. 171, N of Bristol, 22 Mar 1982, *R.K. Godfrey 79444* (FSU); 11 Apr 1957, *L.J. Uttal 5382* (LYN). **Marion Co.:** (1) 3 mi S of Ocala, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS). **Okaloosa Co.:** (1) E of Rock Creek near Hurricane lake, 16 Jun 1980, *G. Wilhelm 7534* (USF). **Suwanee Co.:** (1) Hildreth, 21 Aug 1940, *W.A. Murrill s.n.* (A). **Volusia Co.:** (1) no locality, 01 Aug 1900, *A.H. Curtiss 6703* (NCU). **GEORGIA. Barrow Co.:** (1) 1.2 mi W of Windsor, 25 Jun 1941, *W.H. Duncan 3564a* (GA). **Berrien Co.:** (1) Nashville, between Marion St and GA 125, 19 Apr 1981, *G.F. Joye 423* (LSU). **Burke Co.:** (2) Rte. 56 S of McBean, 13 Aug 1993, *J.B. Phipps 6710a* (UWO); N of intersection with 80, 09 Apr 1991, *J.B. Phipps 6496* (UWO). **Candler Co.:** (2) 0.1 mi W of Lotts Creek and 0.1 mi N of road that crosses creek, 22 Apr 1975, *D.J. Drapalik and W.W. Walker 69* (NCU); 11 mi WNW of Statesboro and NW of Upper Lotts Creek Church, 11 Apr 1977, *D.J.Drapalik and C. Thomas 39* (NCU). **Charlton Co.:** (1) near Folkston, 23 Mar 1940, *J.H. Miller 20* (GA). **Clarke Co.:** (1) Along Oconee River, SE edge of university campus, 16 Apr 1955, *M. Duncan s.n.* (GA). **Liberty Co.:** (1) 11 mi E of Taylor Creek, 27 Apr 1940, *W.H. Duncan 2236* (GA).**Rabun Co.:** (2) Canyon at Tallulah Falls, 16 Aug 1893, *J.K. Small s.n.* (GH); Tallulah River Creek, Sep 1999, *R. Lance s.n.* (UWO). **Richmond Co.:** (10) near Augusta, 23 Apr 1900, *C.S. Sargent s.n.* (DOV); Augusta, 11 Apr 1916, *W.W. Ashe s.n.* (NCU); Augusta, 27 Apr 1902, *A. Cuthbert s.n.* (FLAS); US 1, 10 mi E of Briar Creek, 16 May 1958, *J.A. Duke 665* (NCU); US 1, E of Bath Rd, 14 Aug 1958, *J.A. Duke 2051* (NCU); 2.9 mi E of jct. US 1 and 88, 19 Jul 1958, *J.A. Duke 1636* (NCU); Augusta, no date, *S.T. Olney and J. Metcalf 221* (GH); Augusta, no date, *S.T. Olney and J. Metcalf 220* (NCSC); Augusta sandhills, 27 Apr 1902, *A. Cuthbert s.n.* (FLAS); Augusta, 9 Aug 1902, *A. Cuthbert s.n.* (FLAS). **Screven Co.:** (2) 3.5 mi N jct. GA 17 on 301, 11 Jun 1961, *H.E. Ahles 54343* (NCU); 17.6 km NE of Newington, 18 Apr 1992, *J.B. Phipps 6561* (UWO). **Taylor Co.:** (1) 3 mi E of Rupert, 12 mi S of Butler, 02 May 1942, *W.H. Duncan 5101* (GA). **Talbot Co.:** (2) 2 km ENE of Geneva, 09 Apr 1991, *J.B. Phipps 6587* (UWO); 2 km ENE of Geneva, 13 Aug 1993, *J.B. Phipps 6729* (UWO). **Thomas Co.:** (1) Along roadside US 19 2 mi N of Thomasville, 26 Apr 1952, *S.C. Hood 4511* (FLAS). **Turner Co.:** (2) Along US 75 4.5 mi NE of Ashburn, 03 Jun 1964, *W.R. Faircloth 1054* (GA, NCU). **Walton Co.:** (1) S side of Ga 138, 35 mi W of Athens, 22 Apr 1981, *G.F. Joye 545* (LSU). **Washington Co.:** (1) no locality, 30 Apr 1942, *W.H. Duncan 4937 (*GA). **MISSISSIPPI. Forrest Co.:** (3) E of Pep's

Point, 14 Sep 1969, *K.E. Rogers 1404-A* (GH, UWO); Just E of Pep's Point, 14 Sep 1969, *K.E. Rogers 1404-B* (NCC). **Jones Co.:** (1) 5.5 mi SW of Ellisville, 12 Jun 1960, *J.G. Teer 190* (IBE). **NORTH CAROLINA. Cumberland Co.:** (2) 2.3 mi SW of Hope Mills, 11 Oct 1957, *H.E. Ahles 36604* (NCU); On Rte. 87 near jct. with NC 210, 07 Aug 1948, *E.T. Browne Jr. 294* (KY). **Durham Co.:** (1) Duke Forest, 08 Apr 1951, *W.T. Batson 751* (NCU). **Fayetteville Co.:** (2) no locality, 21 Apr 1909, *W.W. Eggleston 4929* (CM); no locality, 26 Aug 1908, *W.W. Eggleston 4013* (MSC). **Franklin Co.:** (1) near Rte. 56 about 5 mi W of Castalia, 26 Apr 1963, *R.J. Wilbur 6793* (DUKE). **Harnett Co.:** (3) 3 mi SW of Spout Springs, 11 Jul 1968, *S.W. Leonard, A Burnham and M Ripperton 1745* (LAF, NCC, USCH). **Hoke Co.:** (1) 0.4 mi SW of Ashley Heights, 11 May 1957, *M. Neuber and H.E. Ahles 24974* (NCU). **Lenoir Co.:** (1) Few mi S of La Grange, 16 Apr 1991, *J.B. Phipps 6510* (UWO). **McDowell Co.:** (1) 5.5 mi WSW of Dysortville, 1.6 mi ENE of US 221, 01 Sep 1956, *H.E. Ahles and C.R. Bell 17794* (NCC). **Moore Co.:** (3) 4 mi SW of Pinebluff, 01 Jul 1927, *W.E. Manning and K.M. Weigand 1344* (GH); no locality, 20 Jul 1930, *11941* (DUKE); Wildlife Club, SR 1004 at Drowning Creek, 06 May 1976, *T.P. Huntley and J.F. Matthews s.n.* (NCU). **Richmond Co.:** (1) 4 mi E of Hamlet, 1 Jul no year, *K.M. Wiegand and W.E. Manning 1345* (G). **Rowan Co.:** (1) Vicinity of Faith Post Office, 14 Aug 1981, *J.K. Small and AA Heller s.n.* (MSC). **Rutherford Co.:** (1) Midway between Rutherford and Chimney Rock, 08 Aug 1932, *W.C. Coker s.n.* (NCC). **Scotland Co.:** (2) 7 mi S of Laurinburg on No 501, 05 Mar 1937, *M.L. Loker 2* (NCU); Juniper Creek 1.3 mi NE of Silver Hill, 08 May 1957, *H.E. Ahles 24779-A* (NCU). **SOUTH CAROLINA. Anderson Co.:** (3) no locality, 19 Apr 1912, *J. Davis 7757* (US); Private yard, 19 Apr 1912, *J. Davis 7701* (GH, US). **Berkeley Co.:** (1) 1.8 mi E of jct. SC Rte. 45 and Rte. 6 on SC Rte. 6, 07 Apr 1957, *J.G. Haesloop and H.E. Ahles 22403* (NCU). **Chesterfield Co.:** (1) Little Black Creek near SC 265, 05 Jun 1956, *A.E. Radford 12371* (NCU). **Darlington Co.:** (3) Co. Rte. 360 E of Co. Rte. 1040, 2 mi W of downtown Hartsville, 13 May 1988, *C. Horn and D. Rayner 2610* (USCH); N of Lauther's Lake, 03 Aug 1941, *B.E. Smith 952* (USCH); Hartsville, 03 Aug 1940, *B.E. Smith 952* (NCC). **Kershaw Co.:** (2) near US 601, 1.5 mi N of Camden, 04 Jun 1957, *A.E. Radford 23733* (FSU, NCU). **Lancaster Co.:** (2) near Kershaw, 26 Jul 1906, *H.W. House 2605* (MO); 0.4 mi NNE of Little Lynches Creek on US 601 and 1 mi E on dirt road, 06 Jun 1957, *J.G. Haesloop and H.E. Ahles 27425* (NCC). **Lexington Co.:** (1) 0.4 mi W of S. Lake Drive, 21 Sep 1987, *S.R. Hill 18843* (USCH). **Oconee Co.:** (1) no locality, 18 Oct 1915, *W.W. Ashe s.n.* (NCU). **Orangeburg Co.:** (1) 4.7 mi WNW jct. US 301-601 and SC 4 on SC 4, W of Orangeburg, 18 May 1957, *J.G. Haesloop and H.E. Ahles 25272* (NCU). **Richland Co.:** (1) Headwaters of Cobb's Pond within St. Lo Range Training Area 12, 01 Jun 1992, *B. Long and J.G. Nelson 681* (USCH).

Crataegus pexa Beadle
GEORGIA. Bryan Co.: (1) 1.9 mi NE of Pembroke, 30 Aug 1961, *J.A. Boole Jr. 1215* (NCU). **Richmond Co.:** (1) Augusta, 25 Apr 1900, *A. Cuthbert 11* (DOV). **Tatnall Co.:** (1) 3.7 mi SW of Glennville, 24 Aug 1965, *M.G. Padgett 9* (GA). **NORTH CAROLINA. Craven Co.:** (1) New Bern, 20 Apr 1919, *T.G. Harbison s.n.* (A). **Cumberland Co.:** (2) 1.4 mi SW of Fayetteville, 27 Jun 1957, *J. Haesloop and H.E. Ahles 29718* (NCU); 2 mi E of Stedman, Sep 1931, *H.R. Totten s.n.* (NCU). **Harnett Co.:** (7) Pineview, 3 Jun 1957, *H. Laing 1542* (NCU); 0.1 mi W of Johnsonville, 8 May 1957, *H. Laing 1211* (2*NCU); Spout Springs, 18 Apr 1929, *B.W. Wells s.n.* (NCSC); 0.1 mi S of Coates, 15 May 1957, *H. Laing 1315* (NCU); 1.4 mi W of Angier, 24 Apr 1957, *H. Laing 1035* (NCU); 18 mi S of Sanford, 21 Jun 1958, *J.A. Duke 1145* (NCU). **Jackson Co.:** (1) Cherokee, 20 August 1891, *H.C. Beardslee and C.A. Kofoid s.n.* (GH). **Johnson Co.:** (2) 2 mi S of Smithfield, 3 May 1940, *Radford and Stewart s.n.* (GA); 2 mi SE of Four Oaks, 29 Jul 1970, *R.M. Downs and E. Upchurch 11424* (NCSC). **Lenoir Co.:** (1) 1.5 mi W of Jenny Lind, 11 Oct 1958, *C.J. Burk s.n.* (NCU). **Montgomery Co.:** (1) NE corner of Co., 31 May 1953, *Lionel Melvin s.n.* (NCU). **Moore Co.:** (5) 5 mi E of Carthage, 12 May 1958, *J.A. Duke 506* (NCU); E of Harnett Co. line, 25 Apr 1948, *R.J. Campana and R.K. Godfrey s.n.* (NCSC); Southern Pines, 19 Jul 1895, *J.W. Blankinship s.n.* (GH); Southern Pines, 19 Jul 1895, *J.W. Blankinship s.n.* (GH); 0.7 mi N junction US 1 and US 15, 19 Jul 1958, *J.A. Duke 1367* (NCU). **New Hanover Co.:** (2) Wilmington, 15 Apr 1911, *C.S. Williamson s.n.* (CM); Wilmington, 1867, *W.M. Canby s.n.* (NY). **Rowan Co.:** (1) 2 mi NE of Spencer, 26 May 1956, *A.E. Radford and H.E. Ahles 12900* (NCU). **Sampson Co.:** (2) 1.2 mi N of Salemburg, 22 Apr 1957, *R.L. Wilbur 5221* (DUKE, FSU). **Wayne Co.:** (2) 5.6 mi NW of Seven Springs, 21 Jun 1957, *A.E. Radford 25539* (NCU); 0.2 mi N of Neuse Road on N.C. Route 111, 22 Sep 1950, *W.B. Fox with S.O. Boyce and R.K. Godfrey 4312* (NCSC). **Wilson Co.:** (1) 1 mi NW of Sims, 28 Jul 1958, *A.E. Radford 37992* (NCU). **SOUTH CAROLINA. Kershaw Co.:** (1) 4 mi W of Bethune, 7 Sep 1939, *R.K. Godfrey 8021* (MO). **Spartanburg Co.:** (1)near Campobello, 20 Jun 1942, *E.M. Walker 3489* (NCU).

Crataegus quaesita Beadle
FLORIDA. Alachua Co.: (3) Gainesville, 29 Mar 1940, *W.A. Murrill s.n.* (A); Gainesville, 17 Mar 1941, *W.A. Murrill s.n.* (A); Gainesville, 19 Jul 1979, *K.D. Perkins & B.J. Judd 657* (FLAS). **Clay Co.:** (11) Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5667* (A); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5679* (A, NCU); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5670* (A); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5666* (A); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5676* (A); Magnolia Springs, 7 Apr 1920, *T.G. Harbison 5665* (A); Magnolia Springs, 9 Apr 1920, *T.G. Harbison 5670* (A); Magnolia Springs, 21 Mar 1981, *G. Martin s.n.* (MO); Hibernia, Mar 1869, *W.M. Canby s.n.* (GH, NY). **Columbia Co.:** (1) Lake City, 1 Apr 1920, *T.G. Harbison 5661* (A). **Duval Co.:** (6) Jacksonville, 25 Mar 1901, *A.H. Curtiss s.n.* (GH); Jacksonville, Mar no year, *A.H. Curtiss s.n.* (NCU); Jacksonville, in fruit, no date, *A.H. Curtiss s.n.* (NCU); Jacksonville, 1 Aug 1894, *A.H. Curtiss 4552* (GA); Jacksonville, 7 Apr 1885, *C.E. Faxon s.n.* (NY); Jacksonville, 8 Apr 1885, *C.E. Faxon 1858* (A). **Gadsden Co.:** (1) Betw. Chattahoochee and Mt. Pleasant, 14 Mar 1937, *1937 Exploration Party* (FLAS). **Lafayette Co.:** (1) 4 mi W of Mayo, 6 Sep 1940, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS). **Lake Co.:** (1) Ocklawanna R. and Umatilla, 13 Jun 1940, *Watson & W.A. Murrill s.n.* (FLAS). **Leon Co.:** (3) W of Tallahassee, 17 Mar 1982, *R.K. Godfrey & D.W. Hall 79429* (FLAS); Tallahasee, 9 Mar 1914, *C.S. Sargent s.n.* (A); 5 mi W of Tallahasee, 11 Apr 1931, *E. J.Palmer 38517* (A). **Liberty Co.:** (2) Bristol, 6 Sep 1940, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS); Torreya State Park, 19 Jul 1938, *W.P. Porter s.n.* (FLAS). **Madison Co.:** (1) Eilaville, 21

Aug 1940, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS). **Marion Co.:** (6) Ocala, 14 Apr 1940, *W.A. Murrill & Watson s.n.* (FLAS); Ellavale, 21 Aug 1940, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS); near Ocala, 11 Aug 1939, *W.A. Murrill s.n.* (FLAS); Rainbow Springs, 11 Aug 1940, *W.A. Murrill s.n.* (FLAS); 9 mi W of Weirsdale, 22 Mar 1970, *L. Baltzell 1750* (FLAS); Ocala, 8 Mar 1883, *J.D. Smith s.n.* (GH). **Suwannee Co.:** (3) 1 mi E of Ellaville, 31 Mar 1957, *R. Kral 4363* (NCSC); 1 mi E of State Park, 31 Mar 1982, *H.B. & D.S. Correll 53520* (NY); Hildreth, 11 Jul 1940, *W.A. Murrill s.n.* (FLAS). **GEORGIA. Bulloch Co.:** (2) 4 mi SW of Statesboro, 27 Mar 1962, *G.P. DeWolf 1722* (GA, NCU). **Floyd Co.:** (1) Rome, 25 Apr 1901, *Biltmore Herb. 4194* (A). **Gwinnett Co.:** (1) Anniston, 6 Apr 1900, *C.S. Sargent s.n.* (A). **Lowndes Co.:** (1) no location, 27 Mar 1980, *K.D. Perkins & B.J. Judd 126* (FLAS). **Randolph Co.:** (1) 3 mi NW of Cuthbert, 12 Apr 1913, *T.G. Harbison 1364* (A). **Tattnall Co.:** (1) 1.9 mi NW of Reidsville, 11Jun 1961, *H.E. Ahles 54272* (NCU). **Taylor Co.:** (1) 1 mi W of Howard, 22 Mar 1938, *J.H. Pyron & R. McVaugh 2287* (GA). **Washington Co.:** (2) E of Cowpen Creek, 12 Oct 1941, *W.H. Duncan 4331* (GA, NCSC). **Webster Co.:** (2) no location, 8 Oct 1939, *W.H. Duncan s.n.* (GA, NCU). **Wheeler Co.:** (1) along Little Ocmulgee River, 12 Apr 1942, *W.H. Duncan 4715* (GA).

Crataegus sp. aff. **resima**
FLORIDA. Duval Co.: (6) Jacksonville, Mar, *A.H. Curtiss 811* (GA, 2*GH, MO, 2*NY).

Crataegus vicana Beadle
ALABAMA. Barbour Co.: (1) Eufaula NWR, 6 Apr 1993, *D.Drennan 80* (UWO). **FLORIDA. Alachua Co.:** (4) Gainesville, 28 Jun 1940, *W.A. Murrill s.n.* (FLAS); near Micanopy, 6 Apr 1931, *E.J. Palmer 38412* (A); Gainesville, 7 Apr 1931, *E.J. Palmer 38424* (A); Rte. 24, SW of Kanapaha and 4 km SW of SR 127, 12 Mar 1993, *J.B. Phipps 6667* (UWO). **Baker Co.:** (3) near Glen Saint Mary, 1 Apr 1924, *H.H. Hume s.n.* (A); Lake City, 19 Mar 1892, *P.H. Rolfe s.n.* (FLAS, MO). **Clay Co.:** (1) Green Cove Springs, 10 Apr 1940, *W.A. Murrill s.n.* (FLAS). **Gadsden Co.:** (1) Chattahoochee, 9 Mar 1897, *collector?? 2723* (MO). **Highlands Co.:** (1) Highlands Hammock State Park, 5 Jul 1949, *R. Garrett s.n.* (FLAS). **Lafayette Co.:** (1) Old Town, 31 Mar 1919, *T.G. Harbison* 5627 (NCU). **Leon Co.:** (5) 4 mi W of Tallahassee, 7 Apr 1958, *R.K. Godfrey 56422* (AUA, DUKE, FSU, LAF, USF). **Levy Co.:** (1) near Chiefland, 7 Apr 1931, *E.J. Palmer 38436* (A). **Liberty Co.:** (5) Bristol, Mar 1890, *W.M. Canby s.n.* (DOV); Tallahassee, 4 Apr 1972, *P. Elliot 2* (FSU); Tallahassee, 6 Apr 1920, *T.G. Harbison 5644* (A); Tallahassee, 2 Apr 1920, *T.G. Harbison 5647* (A); 15 mi W of Tallahassee, 2 Apr 1959, *R.K.Godfrey 58290* (FSU). **Madison Co.:** (2) Ellaville, 21 Aug 1939, *W.A. Murrill s.n.* (FLAS); no locality, 31 Mar 1914, *T.G. Harbison 1434* (A). **Marion Co.:** (3) near Ocala, 6 Apr 1929, *E.J. Palmer 35185* (A); 4 mi W of Ocala, 20 Mar 1958, *G.R. Cooley & R.J. Eaton 5756* (FSU, USF). **Suwannee Co.:** (2) 1 mi E of State Park, 31 Mar 1982, *D.S. & H.B. Correll 53520* (USF); 5 mi S of Live Oak, 21 Auf 1939, *W.A. Murrill & W.B. Tisdale s.n.* (FLAS). **GEORGIA. Berrien Co.:** (1) 4.5 mi NE of Five Mile Creek, NE of Weber, 23 Jun 1966, *J.R. Bozeman 4838* (NCU). **Bibb Co.:** (1) 7 mi Se of Macon, 12 Apr 1940, *W. Duncan 1906* (GA). **Bryan Co.:** (1) E of Canoochee River, 14 Jul 1966, *J.R. Bozeman 6043* (NCU). **Decatur Co.:** (3) 0.75 mi W of Brinson, near Seminole Co. line, 31 Mar 1982, *R.K. Godfrey 79488* (FSU); 4 mi N of Mt. Pleasant Community, 31 Mar 1982, *R.K. Godfrey 79496* (FSU); Rte. 97 and railroad, 1 mi S of Faceville, 28 May 1983, *R.K. Godfrey 79488* (FSU). **Floyd Co.:** (1) Rome, 5 May 1899, *Wm. Canby 28* (DOV). **Lowndes Co.:** (2) E of I-75 on N side of GA 375, 27 Mar 1980, *W.S. Judd & K.D. Perkins 2596* (LAF); 5.3 mi S of Valdosta, 21 May 1970, *C. Scott 13* (MO).

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